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THE BLUEJACKET'S MANUAL UNITED STATES NAVY

1918

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BY

LIEUTENANT NORMAN R. VAN DER VEER

U. S. NAVY

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PART ONE

THE SUBJECTS WHICH EVERY MAN ON BOARD SHIP SHOULD KNOW

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"The Bluejacket's Manual" originally prepared in 1902 by Lieutenant Ridley McLean, U. S. Navy, revised in 1914 to correspond with the provisions of General Order No. 63 of December 16, 1913, and now revised to date by Lieutenant N. R. Van der Veer, U. S. Navy, is issued to the service for the guidance and the instruction of petty officers and enlisted men. In accordance with General Order No. 63, the Manual is divided into the following parts:

PART I.—The Subjects which Every Man on Board Ship Should Know.

PART II.—The Subjects which Seamen, Second Class, Should Know.

PART III.—The Subjects which the Higher Ratings of the Seaman Branch Should Know.

PART IV.—The Subjects which Chief Petty Officers Should Know.

PART V.—The Subjects which Men of Special Ratings Should Know.

The Department invites criticism and suggestions from commanding and other officers in regard to the form and substance of the Book. Such criticism and suggestions should be sent to the Bureau of Navigation, via regular channels.

Thanks are due to the U. S. Naval Institute, Annapolis, Maryland, for their courtesy in waiving their copyright to the title, text and plates of "The Bluejacket's Manual."

JOSEPHUS DANIELS.

PART ONE

THE SUBJECTS WHICH EVERY MAN ON BOARD SHIP SHOULD KNOW

PART ONE

*"A"

DISCIPLINE AND DUTY

*The letters used in designating the various subjects correspond with those used in General Order No. 63.

PART ONE.

"A."

DISCIPLINE AND DUTY.

By Captain Ridley McLean, U. S. Navy.

1. **A Talk With Each Man Who Enlists.**—This "little talk" is put in the very beginning of the book because it refers to the very first thing you should learn when you come in the service. It tells you of the necessity for *obedience* and *good behavior;* what will happen to you if you violate rules, as well as the rewards the service offers in case you pay strict attention to duty and obey the regulations.

2. Many people get into serious trouble on board ship simply because they do not fully realize what will be the result of their misconduct; others because they think that a trumped-up excuse will be accepted by the captain, or by the court before which they are tried. Some men deliberately disobey orders because they decide that the order is unjust, or because they believe themselves justified in taking affairs into their own hands. It also happens that a number of men commit the first offence, and then, instead of coming forward and "taking their medicine," try to cover it up by falsehood or some other means, with the result that they become very much involved, and then rely upon some officer to appear as counsel before their court-martial and prove that they are not guilty.

3. **What the Navy Offers.**—Although this subject is treated in detail in the next chapter, it is thought advisable to outline it briefly in the course of this talk. *The Navy offers you a good position for life.* Few men realize the value of a "position for life." If you are an enlisted man in the service, you have your lodging and board free. The average pay in the Navy is $39.00 per month; this means that the average of the enlisted men have $39.00 cash each month for their own use; the only part of that amount that is absolutely necessary for current expenses is the slight outlay for uniform. Inasmuch as the government furnishes a complete outfit of uniform when you enlist, all you have to do is to keep your bag replenished. The average age of enlisted men in the service is just 24; and there are very few young men of 24 in civil life who, at the end of each month, can show anything like $39.00 in cash for the month's work, after their living expenses are all paid. So far then as actual pay is concerned, a man who behaves himself, obeys orders, and tries to get ahead, is much better off in the service than out of it.

4. In considering employment, every young man of ambition very properly looks ahead to see what the opportunity for advancement may be. When you look at the Navy from this point of view, you can see all around you men who have entered the service in the lowest grade and have now risen to the rank of warrant officer, chief warrant officer, or that of a commissioned officer; the pay of such men varies from $1500 to $4000 per year. While everyone cannot work up to a commission, nearly every intelligent man who *really tries hard all of the time* gets a warrant, and, in time, is commissioned a chief warrant officer.

5. While you are serving in the Navy, your doctor's bills are paid; and if you get sick, you are cared for in a hospital without cost to yourself; meanwhile your full pay continues in the same way as if you had been on duty. If you are killed, or die from any accident or illness not resulting from your own misconduct, your people receive six months' pay, less $35.00 for funeral expenses; and, if you are killed in the line of duty, your people receive a pension. Aside from the regular pension provided by the pension laws, the following rewards are offered to enlisted men for faithful service; it must be remembered that the following is aside from the retirement laws which give three-quarters of the pay of your rating after 30 years' service, and an allowance for quarters and rations for the rest of your life. "(1) Any disabled enlisted man *who has not been discharged for misconduct* shall, after 10 years' service in the Navy or the Marine Corps, be entitled to a pension, if a board of survey consisting of three naval officers, one of whom shall be a medical officer, appointed by the Secretary of the Navy, shall recommend it." "(2) After 20 years' service, any enlisted man disabled from sea service by reason of age or infirmity, *who has not been discharged for misconduct,* shall, if he so elect, be entitled to a pension equal to one-half the pay of his rating when last discharged, in lieu of being provided with a home in the Naval Home, Philadelphia." Attention is called to the fact that both the above privileges are dependent on a man's not having been discharged for misconduct. If you get to be a warrant officer, or an officer of senior rank, in case you are injured or become physically incapable for further work, you are retired on three-quarters' pay for the rest of your life.

6. The government looks out well for enlisted men *who give good service, and who are obedient.* Absolute obedience is all that the government asks of you in order to let you partake of all the benefits it offers. If you are not so efficient as you should be, it simply results in your not being promoted so

rapidly; but if you are not obedient, you are not promoted at all, and, sooner or later, you will be discharged.

7. Service in the Navy therefore gives you a position in which—

(1) You get more pay than you would probably receive outside of the service; that is, you will have more money at the end of the month if you are in the service than you would have outside the service, after you had paid for your board and lodging.

(2) It gives you "life insurance" in the sense that if you die, your family gets six months' pay of your rating. If you die in the line of duty, they get a pension; if you are disabled, you get a pension, and in case you rise to the rank of warrant officer, you are retired on three-quarters pay at the age of 64, or when you get disabled. If you do not attain warrant rank, you may retire on three-quarters of the pay of your rating, and, in addition, an allowance for rations and quarters.

(3) During your life, you receive free medicine, medical attendance, and hospital service whenever required.

(4) You never know the meaning of "hard times." You have a permanent life job with plenty of room on top, and your pay comes in regularly every month.

(5) You have a chance—how good a chance depends on you, yourself—to become either a warrant or a commissioned officer.

8. In considering your job, you ought to give some attention to all these advantages; but, if you are like most young fellows, you never think of these things unless they are brought to your notice You may be an ordinary seaman getting $20.00 per month, and feel that a friend outside at $30.00 or $40.00 per month is much better off than you are, with the result that you decide you want to quit. But don't do anything like that, it is exactly what the government won't put up with. Stop to consider; in the first place, you get $20.00 cash every month this year, while he gets, let us say, $40.00. But how much does it cost him to live? Certainly not less than $15.00 per month, and his room, which must cost at least $8.00; at the end of each month this leaves him with only $17.00 against your $20.00. If he breaks a leg, he is laid off, and he must get someone to pay his hospital and doctor's bills. He gets to work at 7.00 or 8.00 a. m. and works till 5.00 or 6.00 p. m., and he doesn't get Wednesday and Saturday afternoons to himself, nor has he any time, as a rule, to read or study.

9. Now as to advancement; how much will he be getting five years from now? Look about you and you will see men who

have not been in the service more than five years longer than you have, who are now chief petty officers drawing $80.00 or $90.00 per month besides lodging and rations, and enjoying all the other privileges mentioned above. You will see many warrant officers not more than 10 years older than you who have a position which, even if they do not get a commission, will pay them from $150 to $200 a month for life.

10. All these things are brought to your notice to convince you that you must look at the Navy carefully before you become dissatisfied. Don't become discouraged because you are not rated up immediately. Remember that your officers are watching you every day and that they are anxious to rate you up just as soon as you prove that you are *qualified and reliable.*

11. **Qualification and Reliability.**—These two qualities are essential to advancement. You have come into the service for four years; make up your mind that you will not simply drag along, doing as little as possible. Lend the service a hand, and, at the same time, make a man of yourself. The Navy is a busy place; if you shirk, some other man must do his own duty and yours as well. Therefore you cannot expect to be successful if you do not prove yourself zealous and reliable. Moreover, your future promotion depends upon your becoming efficient in the performance of your duties. Gain *exact knowledge* as to how everything should be done, and *try to know a little more* than your rating requires. Too many drag along relying on the fact that they will be shown how to do everything. There is a "best way" to do everything; learn this "best way," and learn also the duties of the next rating ahead of yours; then, if you are zealous and reliable, you will go up rapidly. Remember that your record is kept from the first day that you enter the service; *keep that record clear.* Few young enlisted men realize what opportunities for promotion and what privileges go with a clear record. Whatever may be your rating, *if you try always to know a little more than your rating requires* and *to do a little more* than your rating requires and *to do it a little better than* you are required to do you will be a chief petty officer when the other man is still a seaman.

12. **Subjects of Special Importance.**—In the following pages certain subjects of special importance are talked over because it is very important that now that you are just starting on your enlistment, you should understand clearly—

(1) The advantages that come to those who obey the regulations and try to help themselves, and

(2) The disadvantages and certain failure that await those who do not obey regulations, and fall into bad habits; or those who are slothful and indolent.

13. Decide *now* that you are going to "make good." Look ahead 10, 20, or 30 years, and see if the advantages are not sufficient to make the service worth your while. It is useless to undertake any vocation unless you intend to give it your very best work. The following pages are written in the effort to guide you and to warn you against certain common pitfalls. Remember that this advice applies to you whether you are a fireman, a seaman, an apprentice seaman, a yeoman, or an artificer, or a mechanic. The same rules of conduct, of discipline, of obedience apply to all.

14. **The Necessity for Good Behavior in the Navy.**—The Navy is a profession in which many people spend their entire lives. There is much work to be done, and success in battle—the primary aim in every military organization—necessitates *implicit obedience to orders;* it necessitates that men must be trained to do *instinctively,* when under the fire of the enemy, everything that must be done in battle. Such is discipline; an instinctive obedience to orders, or to the requirements of duty. Briefly, discipline is the *habit of obedience* by which a man obeys an order naturally and without question, without stopping to consider whether he wants to obey it or not; he must learn to obey simply because the order comes from higher authority. Discipline, therefore, is based upon a respect for authority; it means that you must hold higher in your esteem than anything else, the authority that is placed over you. If you are disrespectful to an officer, or to a petty officer, your offence lies not so much in the fact that you are disrespectful to him personally as it does in the fact that he temporarily represents the supreme authority; and it is the failure of many enlisted men to grasp this fact that often gets them in trouble.

15. **Disrespect to authority** is the essence of all military offences. This disrespect, when it is deliberate, becomes a defiance of authority. A consideration of this fact will show why it is necessary to punish misbehavior in a military service when the same act might not be of serious importance in civil life. Everything comes back to the necessity for discipline, without which it is impossible to drill correctly or to fight a successful battle. In order that the fleet may be well disciplined when war breaks out, it is essential that it be trained to this state of discipline in time of peace. Therefore the Navy can utilize only those men who will behave themselves and lend themselves to the carrying out of all orders and regulations.

If you will not obey the regulations, you are not only unsuited for the work of the Navy, but your example is bad. Consequently, you are landed on shore and discharged; or, if your offence is sufficiently serious, you may be sent to prison.

16. The fact that you may be an excellent man in your line of work does not overcome the necessity for good behavior. The Navy differs from civil life; in most jobs ashore all that is required of you is a certain number of hours of good hard work every day. In the Navy, on the other hand, DISCIPLINE IS NECESSARY FOR SUCCESS IN BATTLE; and the only object of the Navy is to win battles. Therefore good behavior and implicit obedience are primarily essential. The Navy can take a good man and train him to do his work properly; consequently, a man is required to take oath, before enlisting, that he will obey the regulations; and many advantages such as pay, retirement, and honorable discharge are based more on good behavior than on skill in any particular duty. The fact is that, *whatever your rating,* your promotion depends *on excellence in both these features.* If you cannot behave, obey the regulations, and comply with your oath, you are unfitted to carry out the serious work of the service, and the Navy has no time to waste on you.

17. **The Twofold Nature of Duty in the Navy.**—When a man enlists in the Navy, no matter in what rating, the nature of his duties is twofold. The duties are:

First, his MILITARY DUTIES.

Second, the SPECIAL DUTIES OF THE RATING IN WHICH HE ENLISTS.

It cannot be too strongly impressed not only upon every recruit, but also upon every enlisted man, whatever his length of service may be, and whatever his rating, that, entirely apart from the duties of that rating, he has, by virtue of the mere fact that he is in a military service, certain duties of a military nature; and even though his ordinary duties may be such as to reduce the *amount* of his military duties—for example, to lessen the amount of drill—nevertheless, the military side of the profession is always present, and its responsibilities are always in evidence. However expert a fireman, or a machinist, a yeoman or a cook a man may be, he must realize the fact that when he enlists in the Navy, the greatest difference between life in the service and civil life is that, in the Navy, skill in his rating constitutes *only a part of his duty.* In addition to showing that he is competent to perform the duties of his particular rating, he must place himself under military laws and regulations which are quite different from the laws which

govern in civil life. And it is *the neglect of the military half of a man's duties that causes a very large percentage of any trouble that he may experience in the Navy.* A number of men fail to realize just what this military side of life in the Navy involves. In a general way they know that they must be obedient and respectful, but they do not seem to understand the *real importance of being so;* they do not *realize* that failure to be respectful and obedient will injure their records and ruin their chances for promotion.

18. Refusal to Obey.—The most frequent cause of trouble in this respect lies in the fact that some men fail to realize that they are *never justified* in deciding upon the legality or the propriety of an order. Remember always that the person who gives the order has the privilege of deciding as to its legality, and that if you take it into your own hands to conclude that an order is not justifiable or should not be given, you will be seriously punished for disobedience to orders, or for refusal to obey. *The order of a petty officer* is supported by the same authority that upholds the order of an officer, and you will be punished just as severely for disobeying the former as you will for disobeying the latter. Never refuse, or fail to obey, *any order from a superior,* no matter whether he happens to be the captain, or the executive officer, or an ensign, a petty officer, a sentry, or a man acting as petty officer. It doesn't matter who the man is, so long as he represents authority, that is, so long as he is clothed with the authority to give you orders. If you neglect to obey an order, or refuse to obey it, you will not be sustained in your action once in a thousand times. If a petty officer gives you orders that conflict with orders that you have previously received from an officer, it is your duty to inform the petty officer of the fact, and *let him decide* whether he wishes to change his orders. If the petty officer *doesn't* change his orders, then it is your duty to obey him. Under no circumstances should *you* ever try to decide which order to obey; and in a case such as that mentioned you must never fail to inform the junior that you have conflicting orders from a common superior if such be the case.

19. Result of Misconduct.—You must understand clearly what will be the result of misconduct. Military offences may be divided into two general classes:

(1) Those involving neglect of duty.

(2) Those involving deliberate violation of orders, regulations, or instructions.

Misconduct is punished according to the nature and degree of the offence.

20. Neglect of Duty.—Offences under this classification may vary in nature from minor cases—such, for example, as "late at muster," or "slow in sweeping down"—to some neglect the result of which may involve collision, sinking of the ship, or loss of life, such, for example, as putting the rudder the wrong way, or neglecting to close water-tight doors when it is your duty to do so. Owing to the great variety of these offences and the great difference in the effects consequent upon different kinds of "neglect of duty," which extend all the way from mere trivialities to great catastrophes, punishment for "neglect of duty" varies all the way from extra duty or loss of liberty to that inflicted by sentence of a general court-martial. The object of punishing neglect of duty is to enforce discipline, to make people careful and *thorough and reliable* in whatever they do. In battle, even a slight neglect or *one careless act on the part of any one man* might mean the difference between victory and defeat. The old maxim, "Whatever is worth doing at all, is worth doing well," applies more forcibly to duty on a man-of-war than to duty anywhere else. If an officer gives you an order, he counts not only on your carrying it out, but on your executing it *thoroughly and completely;* also he relies on the fact that if, *for any reason,* you cannot execute the order properly and thoroughly, you will come and tell him. This necessity for thoroughness enters into every feature of life on board ship. Neglect of thoroughness, neglect to do your duty—whatever may be your rate—may have tremendous consequences. Nelson signalled before battle: "England expects *every man* to do his duty." Even in those days, success in battle was realized to lie not only with the captain, but with every individual man doing that which he was supposed to do. You may say, "That is all right in action, but why is such strict thoroughness necessary in time of peace?" This "little talk" is just for the purpose of answering questions such as this; in this case the answer is, "Because it is necessary in time of peace to prepare for war." Because it is necessary in time of peace to *train everyone* to do his duty thoroughly. If we didn't practise with our guns, and if we didn't use our engines and our torpedoes in time of peace, we shouldn't know how to use them efficiently in time of war. All our work in time of peace—carried on at great expense—is for the purpose of ensuring our readiness when war is declared. One of the most important features of training is the schooling of the personnel in *thoroughness* and in impressing every one in the service with the meaning of the word "Duty." Remember the old adage that "Wooden ships with men of iron will defeat

iron ships manned by wooden men." There is a word whose meaning you should master at the very outset of your career, a word that, while you are in the service, should be sacred; this word is DUTY. You must work from a "sense of duty"; this means that you shouldn't do something merely because you "have to" do it, or because you will "be caught" if you don't do it; it means that you must carry out orders because it is *your duty to carry them out.* Do the things that you are ordered to do just as *carefully and thoroughly* when you are off by yourself as you would do them if you were being supervised.

21. Deliberate Violation of Orders or Regulations.—Offences of this nature are so serious that the offenders are usually tried by court-martial. In this case the offence, as a rule, lies not so much in the consequences of the act as in the defiance of authority. And discipline requires that *authority* be held supreme and sacred. Such offences are severely punished because, inasmuch as they are deliberate, they defy the supreme authority; and it is seldom indeed that excuses such as ignorance, or drunkenness, or excitability, or the fact that the man who gave the order had no authority to give it, are accepted. You must accept as supreme the authority placed over you; and you must obey this authority. Obedience is a habit; it is just as easy to obey as it is not to obey, and besides *you have taken an oath to obey.* If you get conflicting orders, it is not your business to decide which you will obey. Tell the man who gave you the last order, and let him decide whether you are to obey his order or the one previously given. This decision is *his privilege,* not yours; and if you try to decide for yourself, you will surely get in trouble.

22. Punishments in the Navy.—Punishment may be assigned in four different ways:

(1) The captain is authorized to assign certain punishments; as a rule, these are sufficiently severe to punish minor offences only.

(2) Deck Courts.—If the captain thinks you ought to get more severe punishment than he is authorized to assign, but that your case is not sufficiently serious for a summary court-martial, he may order a deck court. Such a court is not authorized to assign more severe punishment than 20 days' confinement and 20 days' loss of pay.

(3) If your offence is still more serious, the captain orders you to be tried by a summary court-martial. Such a court can sentence you to 30 days' solitary confinement and to loss of three months' pay, or to a bad-conduct discharge.

(4) In case of a very serious offence, the commander-in-chief or Secretary of the Navy may order a general court-martial. As a rule, this court sentences a guilty person to imprisonment at hard labor, loss of pay and dishonorable discharge. The prison term may vary from six months to any number of years, depending on the offence.

(5) In addition to the above, the captain has authority to discharge you at any time for "inaptitude" or as "undesirable," provided that you are in your first enlistment.

23. The object of mentioning all these punishments is not for the purpose of scaring you at the very outset of your career, it is intended merely to show you that, just as, in civil life, you are compelled to obey the laws of the land, so on board ship, you must observe military laws and the traditions of the sea. That it is a simple matter to observe these laws is proved by the fact that the great majority of men go through the service without ever getting into trouble.

24. To summarize the punishments—the captain usually assigns confinement or extra duty. Deck and summary courts, as a rule, assign confinement, loss of pay, or, in the case of summary courts, bad-conduct discharge; general courts assign imprisonment, loss of all pay, and dishonorable discharge.

25. Some men think that officers "get down on them." It is seldom, if ever, that this happens. Of course, an officer does not have the same regard for, nor does he extend the same privileges to a man who is always misbehaving, as he does to a man who is always efficient and alert; but the procedure of courts, including the punishments for the most common offences, are laid down, and they are all followed, with the exception that courts are inclined to give you every possible advantage of anything in your favor. The trouble is that most men, failing to realize the nature of the rules governing punishment and discipline, commit themselves to such an extent that a court has little ground to show leniency. For example, a man may get drunk, and do many things that he wouldn't do if he were sober; and often he thinks he should be excused on that account. Remember this—if you ever do get drunk—that *drunkenness is no excuse* and *your punishment is the same for the offence, drunk or sober.* Or, to give another example, if you overstay your leave without permission, it doesn't matter how urgent your reasons may be, you will be punished, because *it is always possible to communicate with the ship* and obtain an extension, provided your reasons are good and *you have a clear record;* and this is another reason for keeping your record clear. Make up your mind *now, to-day*, that you will *never deliberately* violate any regulations. If you ***must*** remain

absent, get permission to do so. If your record is clear, nearly any reasonable request will be granted.

26. **Unauthorized Absence.**—This is much the most frequent offence committed by enlisted men. It takes numerous forms, varying in degree from the man who is delayed in returning to the ship by reason of a blockade in traffic, or one who is not called in the morning, to the man who deliberately remains out for months or years. It is such a common offence that some enlisted men do not regard it as a serious breach of discipline; and when they are severely punished they feel that they have been unfairly treated. The fact that a man *deliberately* overstays his leave is, of course, a serious military offence, regardless of his reason for overstaying, and this fact must be clearly understood. Overstaying leave *accidentally or through no fault of your own,* due, for example, to a railroad wreck, or to a blockade in traffic, is no offence, and your excuse will be accepted if your record is clear, and your reputation such that you have never given reason for your word to be doubted. You must realize, however, that, even in the case quoted, if your record and your reputation are bad, officers, who hear trumped-up excuses every day, are merely human, and they may not believe your story; and this is another example of the necessity for *always keeping your record clear.* Overstaying leave accidentally which, despite the accident, involves neglect on your part—such, for example, as oversleeping yourself—is an offence, but it is not serious provided you *get back as quickly as possible* after you wake up. Overstaying leave *deliberately for any reason whatever* is a very serious offence because *it defies the authority placed over you.* For example, suppose you have orders to return at 8.00 a. m. If, at 8.00 a. m., you deliberately fail to return, whether it is because you wish a longer liberty or because you have some friends with you, or because of business, or sickness, you practically say: "I know I am ordered to be back; but I will stay as long as I wish, and then let them punish me." In this manner you are deliberately disobeying an order, and this is a military offence of the most serious nature. So many excuses are given for this offence that it may be well to consider some of them.

(1) Some men give as an excuse that they were intoxicated at 8.00 a. m., and stayed on shore to sober up. It is unnecessary to say that there is never any excuse for your being intoxicated; but if, by any chance, you should feel intoxicated, or in need of sleep, when your liberty is up, *remember that the ship is the best place for you.* If you return to the ship in such a condition, and raise no disturbance, your offence is much less

serious than it would be had you overstayed your leave; and consequently, your punishment will be much lighter.

(2) Men sometimes state that they were sick, and bring the certificate of some unknown doctor. If you really *are* too sick to return, that is, of course, an excuse, but the doctor's certificate doesn't prove the fact; there are too many quack doctors. Therefore if you are sick, telephone or telegraph the ship, giving your address, and request medical attendance. If you have a clear record, everything possible will be done for you. If, instead of doing this, you take affairs in your own hands, it is very doubtful if your certificate will be credited, and it is very probable that you will be punished for being overtime.

(3) Sickness of the family is sometimes urged as an excuse; but this is not a valid excuse unless you have *communicated with the ship*. You always have time to telephone or to telegraph. *If you do this before your leave has expired*, it creates a presumption in your favor, especially if you have a clear record, as it gives the ship's authorities a chance to investigate the truth of your report; moreover, it shows that you desire to comply with regulations.

(4) Sometimes mothers, or other members of the family, persuade men to overstay, and they sometimes appear as witnesses before a court. Remember always that this is *never an excuse*. You are under oath to obey the regulations of the Navy, and no one can relieve you of that duty; your punishment is just as serious if you remain away at the request of your mother as it would be had you remained away of your own accord.

(5) Men sometimes give as an excuse that they were held by the civil authorities. The law on this subject is that if men are tried and acquitted by civil authorities, they are not to blame, and no punishment is assigned for the absence due to their being thus held; but if they are held by the civil authorities, and found guilty of some misconduct, they have been held *by reason of their own misconduct*, and hence, on their return to the ship, they will be punished for overstaying their leave.

(6) It frequently happens that men overstay liberty just before a ship sails, miss their ship, and give themselves up on another ship. In this case they are punished by *30 days'* loss of pay for missing ship, and, in addition, they lose pay and receive punishment for the entire time they are absent from naval control. This punishment is given because a man's duty is on the ship to which he is attached; there is where he is needed, and during his absence other people must do his duty.

Therefore if your ship sails, the best thing you can do is to follow her and report on board *as soon as possible.*

(7) There is one feature about absence over leave that shows up in a very large number of courts-martial. A man gets out of money, or oversleeps, or, for one reason or another, finds himself overtime, then thinking he will be punished anyway, he does not return immediately. This is the worst mistake you can make. *Always return just as soon as possible.* The sooner you get back the easier will be your punishment, and the more likely will the officers be to accept your excuse. Officers always try to help a man who seems to be *trying to help himself.* It is the *deliberate acts* which are punished severely, and the longer you persist in remaining outside, the more severe your punishment will be. Never remain outside a minute because you feel that you will be *punished anyhow.* The longer you remain out the more severe your punishment becomes.

27. Desertion.—Desertion consists in absence from station and duty with the intent to leave the service permanently. The department is very lenient, and *if a man surrenders* as a straggler, and there remains one year, or more, of service in his current enlistment, he is, as a rule, tried for absence without leave, although he may have been out for some months. A man is guilty of desertion if at any time during his absence he has the intention of quitting the service permanently. Many facts serve to indicate such intent; for example, the disposal of uniform, going outside and establishing one's self, or getting married, and failing to make any attempt to return. Much the same excuses are given to courts as in the case of absence over leave.

28. Few men realize how frequently deserters are captured. Last year, owing to the increased reward which was offered, 30 per cent of the men who deserted were either captured, or voluntarily surrendered. Many times deserters are captured by the civil service men (who keep up with all deserters) after they have married and have families; frequently they are captured several years after their desertion, and after the men thought it perfectly safe to return to their homes. These civil police are *all over the United States,* and many of them live on the rewards which they receive by apprehending deserters. They keep a list of deserters, their home addresses, and other facts that assist in the recovery of deserters.

29. Likewise, there are few enlisted men who realize the effect of desertion. If men could but read the appealing letters from mothers, wives and sweethearts concerning those men

who have been taken from them because of desertion, no one would ever desert. These letters tell of the chagrin of having a son or a husband in prison, and often of a destitute condition due to the fact that he loses all pay. Hundreds of such letters are received by the Navy Department every month. Often these letters tell how good a son, or a brother, or a husband the man made. But they rarely, if ever, do any good, for the simple reason that the department is punishing the man for a certain specific act (deserting) which he committed, and all his goodness to his family does not remove from his record this violation of the law. Not infrequently it happens that his imprisonment is as much of a punishment to his family as to himself, but he brought it on, and has himself to blame. This is written in the hope that before deserting, before allowing your family or your sweetheart to persuade you to remain at home, that you will give a thought to this side of the question.

30. There are two or three things to remember about desertion and absence over leave:

(1) It is always better to surrender than to be arrested and brought back.

(2) It is better to surrender in uniform than in civilian clothes.

(3) The sooner you surrender the better. The less time you remain out the better off you will be.

(4) There is never any excuse for an unauthorized absence of over 24 hours without communicating with the ship.

(5) There is never any excuse for desertion that can be accepted by any court.

(6) Unless a deserter surrenders on board ship, he will be sent to prison.

(7) The punishment for prolonged absence over leave inflicted by general court-martial is likewise imprisonment.

(8) Finally, when you are in prison, your family and dependents suffer as much as you do; often more, for while you are in prison, you at least are fed.

(9) Imprisonment for desertion varies from one to two and a half years; this is not only a long time to remain in prison, but it is also a blot on your future career.

31. The following is taken from a deserter's statement:

"I deserted on account of my sister being sick. I could not get liberty, and I ran away from the ship and went to see my sister. I did not intend to desert, and would like to be restored to duty."

This is an actual case, and it is typical of a very large number of statements. In this case the sentence was 18 months in

prison. If the man had behaved, and had a clear record, and if his sister had really been sick enough to necessitate his presence, he could have obtained the desired permission. The question arises whether the pleasure of remaining at home was worth the punishment of one and a half years in prison on reduced fare, at hard labor, and loss of all pay during that time.

32. Offences When Under Sentence of Court-Martial.—Frequently men who have been tried by a summary court-martial and sentenced to a bad-conduct discharge, realizing that they are going to be discharged anyhow, commit serious offences while waiting for their discharge. This paragraph is inserted here for the purpose of telling you that any offence committed under such circumstances is *just as serious as one committed when not under sentence of discharge.* If you commit a serious offence, while awaiting sentence of discharge, you may, and probably will, be court-martialed again, and receive a term of imprisonment before being discharged.

33. Remember that any offence committed while under arrest, awaiting trial, or while awaiting discharge will be *more seriously punished* than one committed under any other circumstances. Once you have enlisted, you continue under military orders and are subject to military laws up *until the moment you actually receive your discharge papers.* Your discharge can be held up at any time before it is actually delivered, in order to try you for violation of discipline.

34. Fraudulent Enlistment.—Many men leave the service by desertion, or by receiving a bad-conduct discharge due to their own misbehavior, and then, after they get outside, they realize that the Navy is a fine place, and re-enlist by fraudulently and falsely concealing the fact that they have ever been in the service before. Since the finger-print system has been in operation, *every single case of fraudulent enlistment is detected.* It isn't a question of being recognized; finger prints are easily catalogued; they are all compared; and if you have been in the service before you will *certainly* be detected and sent to prison. The real offence lies in the fact that by your false representations you have led the recruiting officer to enlist you, and that you receive money due to your false statements. If you have left the service without recommendation for re-enlistment, the only thing to do is to endeavor to obtain permission from the Navy Department to re-enlist; any other method will land you in prison. Eighteen per cent of Navy prisoners have been committed for fraudulent enlistment.

35. **Prisons and Imprisonment.**—The Navy uses three classes of prisons:

(1) For crimes which, outside the service, would involve the penitentiary—such, for example, as theft or embezzlement, or any indecent or scandalous acts—men are confined in the penitentiaries of certain states.

(2) For offences of a purely military character that show a man to be unfit for the service, and prove that he never will be fit for the service, he is sentenced to a naval prison and set to hard labor.

(3) Very young offenders, especially those *who surrender voluntarily* when charged with desertion, are sent to disciplinary ships where they are confined and made to undergo very strict discipline and drill.

36. None of these prisons are pleasant and the prospect of from one to three years' confinement ought to be sufficient to make you hesitate before you deliberately commit an offence. Keep out of prison. Don't commit an offence and then try to get your relations and friends to save you; they can't.

37. **Fines.**—A number of men have dependent relatives. Whether they are sent to prison, or merely are fined by a summary court-martial on board ship, their allotment must cease and their relations suffer. Your money is given you for your services. Remember that the government and your officers had much rather do without fining anyone. The government doesn't need the money; it needs your good behavior. Therefore, give the government your services and keep your money for yourself and your family.

38. **Summary.**—

(1) Be very careful always to keep your record clear.

(2) A man with a clear record can get permission to do nearly anything in reason.

(3) *Never take* the law into your own hands. Always get permission to do anything that requires special permission.

(4) In case of unavoidable absence, always communicate with the ship immediately.

(5) If absent over leave, remember that the sooner you return, the better. Don't make a bad matter worse by prolonging your absence.

(6) Unless you voluntarily surrender on board ship, no excuse you can possibly give will keep you out of prison, if you are convicted of desertion.

(7) A large percentage of deserters are captured, sometimes years after desertion, and returned to prison.

(8) Endeavor to "*make good*" *all the time.*

(9) Endeavor to learn all about your own particular duties, and then a little more.

(10) Remember that any deliberate violation of the orders of a senior, even if he be only an acting third-class petty officer, is a defiance of the supreme authority and of the laws of the United States, as well as a violation of the oath you have taken upon enlistment.

(11) Remember that even if you have been sentenced to loss of pay by a court-martial, you may, as a rule, secure the entire remission of this loss of pay if you are eventually discharged from the service with an honorable discharge, but if your future conduct is such as to warrant your discharge with bad-conduct discharge, you will forfeit the entire loss of pay adjudged by sentence of courts-martial. If you are discharged with an ordinary discharge, you lose one-half of the pay adjudged by sentence of the courts.

Q. What are the rules of discipline?

A. (1) Obey orders cheerfully and willingly.

(2) Obey the last order received from any responsible senior.

(3) Show respect to your seniors at all times. Obedience of these rules forms a very essential part of your actual duties; of your daily work; of what you are paid for; and a failure to comply with them can work injury only to yourself.

Q. What is meant by obedience to orders?

A. It is a prompt, ready, zealous, and complete compliance with orders given. A slow, unwilling, partial compliance with orders is as bad as flat disobedience, and in such cases a guilty person should be reported.

Q. What is the first principle of discipline?

A. A prompt obedience to the orders of superiors.

Q. How is this obtained and enforced?

A. While it often necessary to have recourse to punishment for those who deliberately violate orders, it must not be supposed that discipline and punishment go hand in hand, and that one is dependent on the other. Discipline is obtained by a constant attention to the minor details of life on board ship; by requiring an absolute compliance with the details of all drills and evolutions, correcting, and, if necessary, reporting every infraction of the regulations.

Q. Next to a strict obedience to orders, what always marks a well-disciplined ship's company?

A. Quickness of movement, and complete absence of noise, confusion, and "singing-out."

Q. What language is always improper on board ship?

A. Profane, abusive, obscene, loud, boisterous language; and noises, disturbances, or confusion of any kind.

39. Theft.—In a body so large as the enlisted force of the Navy, a few dishonest men are bound to be encountered. In addition to this small percentage, there are some men—in other respects of unimpeachable honesty—who seem to have elastic consciences in regard to the theft of clothing. To steal a shipmate's clothing is an act just as criminal as it is to steal his watch or his money. Some men, too, are careless in this matter. They take another man's clothes from the line, or pick them up about the deck, and appropriate them to their own use. If you have another man's clothes in your possession, you subject yourself to the suspicion of theft; and the "Articles for the Government of the Navy" establish the punishment for theft as from two to four years' confinement and dishonorable discharge. This term of confinement is served in the PENITENTIARY. Consequently, after serving out his sentence, a man leaves the Navy branded for life as a criminal. Stop to consider that if you have in your possession the clothing of a shipmate—no matter how you obtain it, unless by official authority—you may be sentenced to a term in the penitentiary. A good rule to remember is the excellent advice, "Avoid not only evil, but the appearance of evil." Some men have been known to pawn articles belonging to a shipmate, with the intention of redeeming the articles at a later date and restoring them to their owner. Needless to say that, no matter what the intent may be, a man guilty of this dishonesty will be court-martialed for theft.

QUESTIONS IN REGARD TO COURTS-MARTIAL AND THE OPERATION OF ARTICLE 4893, NAVAL INSTRUCTIONS.

1. Q. What is the policy of the Navy Department in regard to the offense of unauthorized absence?

2. When a man is deliberately absent overleave, he openly defies the authority placed over him, and directly disobeys his orders. This offense is no less serious simply because a man is on shore. It is equally serious with a similar disobedience where the man is on board ship; and it is manifest that if the offender is old enough to realize the gravity of his offense, he is an unfit person to retain in the naval service. The Navy offers to young men such a career that it can readily be kept fully recruited with men who are willing to obey the regulations and return to their duty at the expira-

tion of their leave. This is evident when the percentage of liberty breakers is compared with the large percentage of men who always return on time. It is considered that in time of peace the offense of unauthorized absence not involving desertion is properly an offense which demonstrates merely unfitness for the service.

3. Q. Upon what theory is based the schedule of punishments prescribed for naval courts-martial?

4. A. On the theory (1) that any man who is absent overleave for a period greater than 24 hours without proper excuse, and without taking the necessary steps to communicate with proper authorities, is guilty of deliberate disregard of orders.

(2) That men guilty of the more common offenses should be punished by reduction of pay for varying periods rather than by imprisonment.

(3) That men who are guilty of certain offenses which demonstrate unfitness for the service, but which are not of such nature as to render imprisonment essential for the maintenance of military discipline are to be summarily discharged.

(4) That for the first offense meriting discharge men may, *at the discretion of their commanding officer*, be given another chance by the substitution of fine and probation instead of a summary discharge.

5. Q. Does the policy of the department, as outlined above, apply to apprentice seamen or recruits under training at naval stations and marine recruit depots?

6. A. No; such men are punished at the discretion of the commanding officer. The policy outlined in paragraph 4, however, applies to all men in the regular service and to men other than apprentice seamen or recruits under training at naval training stations and marine recruit depots.

7. Q. Why is the offense of absence overleave regarded as an offense of such a serious nature

8. The offense is serious not so much on account of the duration of the absence as on account of the deliberate intent involved in the failure of the accused to return to duty. The department has decided that the example which the offenders set to others renders it necessary to rid the service of such men.

9. Q. What is the policy of the department in regard to men who are guilty of the offense of drunkenness on shore

10. A. The comparatively small number of cases of drunkenness on shore on the part of men in uniform brings more discredit upon the naval service, as regarded by civilians, than any other offense. The percentage of men in any large liberty

party who are guilty of such conduct is remarkably small—so small that the service would be profitably rid of them. Their actions bring into disrepute the discipline of the service, and the uniform not only that they wear, but that the large class of well behaved, sober, self-respecting enlisted men wear. Men with such habits are rarely desirable, and it is therefore directed that special attention and effort be devoted to stopping this highly discreditable offense.

11. Q. IS IT POSSIBLE BY SUBSEQUENT GOOD CONDUCT TO SECURE THE REMISSION OF LOSS OF PAY ADJUDGED BY SENTENCE OF COURT-MARTIAL?

12. A. In the great majority of courts-martial involving loss of pay, the following procedure holds: When a man is discharged from the service, the total amount which has been deducted from his pay during his enlistment, by reason of sentences of courts-martial, is credited to his account. If the man receives a dishonorable discharge, a bad conduct discharge, or is discharged as undesirable, for inaptitude, or physical disability due to his own misconduct, he will be checked the total amount of pay withheld during his enlistment pursuant to sentences of courts-martial (including deck courts) which has been conditionally remitted. IF A MAN RECEIVES AN HONORABLE DISCHARGE, NO CHECKAGES BECAUSE OF SUCH SENTENCES WILL BE MADE AGAINST HIS ACCOUNT. If he receives any other form of discharge, his account will be checked one-half of the total amount of such sentences.

In the case of a marine, the entire loss of pay will be remitted if he receives "excellent," or "very good" discharge, and one-half will be remitted if he receives a "good" discharge.

In case a man should extend his enlistment, or in the event of his death prior to expiration of enlistment, the amount deducted from his pay in accordance with the instructions, during his current enlistment, will be determined in accordance with the character of discharge which he would have received had he not extended his enlistment, or had his enlistment expired on the date of his death.

Men should not be placed on probation for a period extending over the expiration of their enlistment; but in case men are inadvertently placed on probation for a period extending over the expiration of their enlistment, the character of their discharge is entirely within the discretion of their commanding officer. Whether the period of probation has been served or not, the commanding officer, at the date the man's enlistment expires, discharges him with a discharge of whatever character he may see fit, taking into consideration the man's entire record and his conduct while on probation.

When the sentence of a court-martial is to be acted upon in accordance with these instructions, the commanding officer informs the accused that the amount of such sentence will be temporarily withheld, and will eventually be paid him in full, or in part, or will be entirely forfeited, dependent upon his future conduct.

Attention is invited to the fact that, by a recent decision of the department, the same provisions for extension of enlistment for a period of one, two, three or four years from the existing period of enlistment apply to marines, as well as to enlisted men of the Navy.

NOTE.—It must be remembered that the provisions of Article 4893, Naval Instructions, in regard to the remission of loss of pay adjudged by sentence of courts-martial apply only in cases where the commanding officer, or convening authority, sees fit to remit this loss of pay, subject to the provisions of Article I-4893. As a rule, however, this is the action of the convening authority.

13. Q. When a sentence of loss of pay is mitigated in accordance with the provisions of Article I-4893, how is the deduction of pay made?

14. A. On the first of each month the captain gives the pay officer a list of all men on the ship against whom deductions in pay are to be made. This memorandum shows the names of the men and the total amount of pay which is to be deducted. So much of the pay due each man on the 15th of the preceding month as may be required to cover the amount of pay to be forfeited, as shown by the captain's memorandum, is at once deducted from the man's account. If the pay due the man on the fifteenth of the preceding month is not sufficient to cover the loss of pay which has been adjudged, on the 1st of each following month there will be deducted from the pay of this man the amount of pay due him on the 15th of the preceding month, or such part thereof as may be necessary to satisfy the forfeiture, until the total amount of pay forfeited by the terms of the sentence has been deducted; in cases in which sentences involving loss of pay are approved between the 1st of the month and pay day, the captain, by special memorandum, notifies the pay officer thereof, and deduction is made by the pay officer before pay day, in accordance with the above. In cases approved between the 15th of the month and pay day, the captain sends a special memorandum to the pay officer, in order that the pay due the accused on the 15th, or as much thereof as is required to cover the sentence of the court, may be withheld and the necessary deduction made on the first of the following month.

Therefore, the following points should be borne in mind by men sentenced to loss of pay by court-martial, in accordance with the instructions outlined above:

(1) If your future conduct is such as to warrant your discharge from the Navy with an honorable discharge, the entire loss of pay deducted from your account by sentence of court-martial will be remitted.

(2) If you are discharged with an ordinary discharge, one-half of the pay thus forfeited will be remitted.

(3) If you are discharged with any form of discharge other than honorable or ordinary, the entire loss of pay adjudged by court-martial is deducted.

(4) It is, therefore, a financially paying proposition to maintain a standard of conduct that will insure your discharge with an honorable discharge.

15. Q. In general, what character of offenses are covered by the policy in regard to courts-martial as outlined in the above paragraphs?

16. A. Only certain of the most common offenses. Nothing in the order affects sentences of any man guilty either of a criminal offense, or of a military offense which is of such a serious nature that the maintenance of discipline may require a term of imprisonment; such, for example, as contempt of authority, assault, threatening superior officer, or other offenses doing violence to the supreme authority of naval discipline.

17. Q. What is the usual punishment adjudged by court-martial for attempting to leave ship or station without permission?

18. A. Deck court; 15 days' loss of pay.

19. Q. What is the punishment, under ordinary circumstances, for absence without leave, less than 24 hours?

20. A. Deck or summary court; 15 days' loss of pay for the act, and one day's loss of pay for each hour absent.

21. Q. Suppose the offense is committed when you are under arrest, or while a prisoner at large?

22. A. Summary court-martial; 3 months' loss of pay and bad conduct discharge, the bad conduct discharge to be executed at the discretion of the commanding officer at any time within 6 months. By good conduct you can secure the remission of this sentence of bad conduct discharge. And if your conduct is such that you are finally discharged with an honorable discharge, you may also secure the remission of the entire loss of pay adjudged. If you are discharged with an ordinary discharge, one-half of this loss of pay is remitted.

But if you receive a bad conduct discharge, you lose the entire amount of pay adjudged by sentences of courts-martial.

23. Q. What is the usual punishment for absence without leave, 24 hours to 10 days?

24. A. The same as that given in paragraph 22 above.

25. Q. What is the usual punishment for absence over leave?

26. A. Less than 4 hours, punished by commanding officer. 4 to 24 hours, deck or summary court-martial, 1 day's loss of pay for each hour absent. 24 hours to 10 days, summary court-martial, three months' loss of pay, and bad conduct discharge, the bad conduct discharge to be executed at any time within 6 months at the discretion of the commanding officer. Remission of bad conduct discharge and loss of pay may be obtained as explained in paragraph 22 above.

27. Q. What is the usual punishment in case of unauthorized absence involving missing ship, draft or detail?

28. A. Any man who, without justifiable cause, is absent when his ship sails, or when a detail or draft to which he is assigned departs, shows a culpability even greater than in ordinary cases of unauthorized absence. The fact that this man may shortly thereafter report on board another ship in no way alters the fact that he was absent from his own ship, station, or detail when his services were specially required. In such cases a man is under even a greater responsibility to return than ordinarily, and his failure to return under these circumstances receives correspondingly greater punishment. Therefore, in addition to the punishment prescribed above for cases of unauthorized absence (less than 10 days), the sentence invariably carries with it a loss of 30 days' pay, unless the maximum loss of 3 months' pay be thereby exceeded.

29. Q. How is the time of unauthorized absence computed?

30. A. From the time absence begins until the man reports and places himself under naval control.

31. Q. What measures are usually taken in deliberate or aggravated cases; for example, when it appears that a man deliberately avoided duty?

32. A. The maximum penalty allowed should be adjudged; three months' loss of pay, and bad conduct discharge.

33. Q. Are recruiting stations authorized to receive stragglers who desire to surrender?

34. A. Recruiting stations are not authorized to receive stragglers who desire to surrender or to furnish them with transportation and subsistence. When men surrender on board ships other than their own, they will either be court-martialed

on the ship on which they surrender, and discharged, or returned to their own ship at their own expense.

35. Q. What are the usual punishments in the case of unauthorized absence, including desertion, absence over or without leave?

36. A. (1) *If a man surrenders* and there remain 12 or more months on his current enlistment; general court-martial, 6 months' loss of pay, and dishonorable discharge, the latter to be executed at the discretion of the convening authority at any time within one year. By good conduct, a man may obtain the remission of the dishonorable discharge and the loss of pay, as explained in paragraph 22 above.

(2) If a man surrenders, and has less than 12 months on his current enlistment; general court-martial, imprisonment in a naval prison. But, if a man surrenders before his enlistment expires, he will be allowed to make application for extension of enlistment subject to the following provisions: The application is to be made *voluntarily* by the applicant and he is to be informed that final acceptance rests with the Navy Department, and that such acceptance will be based upon his past record and the circumstances attendant upon the commission of his offense. If his agreement to extend his enlistment is perfected and accepted by the Bureau of Navigation, the applicant will be restored to duty on probation and half pay in accordance with the provisions of Article I-4893 of the Naval Instructions as outlined above. By good conduct a man may obtain the remission of the dishonorable discharge and the loss of pay, as explained in paragraph 22 above. The period of extension will in no case be less than one year, nor can this extension extend more than four years from the date of the expiration of the existing enlistment, and *in each case will be for a sufficient length of time to cause the man to make good the unauthorized absence.* Before an enlisted man is permitted to execute an agreement to extend his enlistment, he shall be carefully examined by the medical officer to determine his desirability for retention in the naval service.

(3) If delivered by civil authorities; general court-martial, imprisonment in naval prison. But, any man apprehended from desertion or unauthorized absence who has a period of one year remaining upon his enlistment from the date of his trial may effect his restoration to duty on probation for a period of one year, subject to the provisions of Article I-4893, instead of being confined at hard labor in a naval prison, provided he deposit with the pay officer of the station or vessel to which he is attached an amount sufficient to liquidate his indebtedness (including reward paid) to the United States at

the time of his trial. In no case will a man be permitted to extend his enlistment where the period of enlistment has expired prior to his agreement to extend his enlistment; neither will a man enlisting to serve during minority be permitted to extend his enlistment even though the terms of his minority enlistment shall not have expired. As required by law, all periods of extension will be in terms of one, two, three and four years; no extension will be less than one nor more than four years from the date of expiration of the then existing enlistment.

The provision in regard to extension of enlistment outlined in paragraphs (2) and (3) apply to marines as well as to enlisted men of the Navy.

37. Q. What is the usual punishment for fraudulent enlistment?

38. A. If a man's previous record shows that he is manifestly undesirable for the service, either by reason of one or more previous fraudulent enlistments, or previous criminal record, or previous offense against military law; general court-martial, imprisonment in naval prison under existing regulations. This is the safeguard against habitual fraudulent enlisters (repeaters). On second fraudulent enlistment, imprisonment will invariably be adjudged.

(2) If his record has been such as to warrant the expectation that the man will prove desirable; summary court-martial, three months' loss of pay and bad conduct discharge, the bad conduct discharge to be executed at the discretion of the commanding officer at any time within 6 months. By good conduct, the remission of bad conduct discharge and loss of pay may be obtained as explained in paragraph 22 above.

(3) If a man is a deserter and is thus amenable both for desertion and fraudulent enlistment, and if his record warrants the belief that he will prove desirable; general court-martial, 9 months' loss of pay and dishonorable discharge, the dishonorable discharge to be executed at any time within a period of one year at the discretion of the commanding officer. By good conduct, the remission of the dishonorable discharge and loss of pay may be obtained as explained in paragraph 22 above.

39. Q. What is the usual punishment for drunkenness, or other serious misconduct on shore which reflects discredit on the service, and which does not require imprisonment?

40. A. Summary court-martial, three months' loss of pay, and bad conduct discharge; to be executed at the discretion of the commanding officer at any time within 6 months. By good conduct, the remission of the bad conduct discharge and

the loss of pay may be obtained, as explained in paragraph 22 above.

41. Q. What is the usual punishment in the event of other serious offenses not sufficient to necessitate a term of imprisonment?

42. A. Men are tried by summary court-martial. The sentence in each case depends upon the gravity of the offense. These offenses are so variable in their nature and in their seriousness that a schedule is not regarded as practicable. Generally speaking, it may be stated that if the *offense* (not the wording of the specification, but the actual offense committed) shows the man to be undesirable, the sentence of three months' loss of pay and bad conduct discharge should be imposed, as this leaves it optional with the commanding officer either to discharge the man or to place him on probation, during which time he will be undergoing effective punishment.

43. Q. What men are imprisoned in naval prisons?

44. A. (1) Those who commit very serious infractions of military discipline.

(2) Fraudulent enlisters who, by past record, are manifestly undesirable for the service.

(3) Stragglers or deserters absent over 10 days who are delivered by civil authorities.

(4) Stragglers who surrender with less than one year to serve.

Such of these prisoners whose records justify the belief that they may be desirable, and whose term of enlistment does not terminate prior to their sentence, may, upon recommendation of the commanding officer of the prison, be transferred to detention, provided they have served one-third of the sentence adjudged. While in detention, during good behavior they will undergo strict ship drills, routine and instruction during the second third of their sentence. If their behavior does not warrant, they will be returned to hard labor, at the discretion of their commanding officer. If, upon the completion of their detention, they are so recommended by their commanding officer, they will be unconditionally restored to duty in the service, and, on expiration of enlistment, receive a discharge the character of which is determined by their entire service during current enlistment. Those prisoners whose records in the service indicate that they will be undesirable men for the service will, if their conduct during imprisonment has remained excellent, be discharged pursuant to sentence of court-martial at the expiration of two-thirds of the adjudged period.

45. Q. Wherein does the punishment adjudged for men guilty of criminal offenses differ from the punishment assigned those guilty of military offenses?

46. A. Men guilty of criminal offenses are confined in State Penitentiaries, and, of course, they are not permitted again to enlist in the service. If they enlist fraudulently, they will be sent to prison.

47. Q. What is done in regard to distinctive insignia of uniform prior to discharge in all cases of bad conduct discharge, dishonorable discharge, and undesirable discharges?

48. A. The distinctive insignia of the uniform are badges of honor. In view of this fact, in all cases of bad conduct discharge, dishonorable discharge, and undesirable discharge, the badges of uniform must be removed prior to discharge. These include cap ribbons, metal devices, rating badges, specialty badges, tape and watch marks, chevrons and service stripes.

49. Q. What points in regard to the rules of discipline is it most necessary for enlisted men to bear in mind?

50. A. (1) The desirability of a *clear record* and the consequences of the first court.

(2) The fact that their record is a permanent document which cannot be changed, and that this record is kept from the day they enter the service.

(3) That drunkenness is never an excuse for an offense, but that in many cases it is an aggravation.

(4) That family affairs afford a man no excuse for taking the law into his own hands, though they may, if established, exert a very strong influence in favor of granting requests *before* the commission of an offense. And, furthermore, that a clear record is a most potent factor in leading officers to grant such requests.

(5) That in case they are necessarily detained, they should *immediately* communicate with their ship, giving full reasons and all possible information as to conditions. The telephone, telegraph or the mail all offer means of communication. If no reply is received, men are not justified in assuming that their request is granted merely because they have sent a telegram, or written. On the contrary, the failure to receive positive information to remain absent renders it essential that they return to their ship at once.

(6) That if they find they are overleave the quicker they get back to their ship the better, and the less severe will be their punishment.

(7) That missing ship, or a draft or detail, is punished even more severely than ordinary absence.

(8) That recruiting stations are not authorized to accept the surrender of stragglers or deserters, nor to furnish them with transportation or subsistence, except when they have been de-

livered by civilian authorities, in which case they will be sent to prison.

(9) That stragglers or deserters absent over 10 days who are arrested by civil authorities will be sent to prison; but ordinarily those who surrender on board ship will not be punished by imprisonment.

(10) That rewards, the amount of which is to be deducted from the man's accounts, are offered for the arrest of deserters by civil authorities; and that there are various agencies throughout the country that earn a livelihood by arresting and delivering deserters.

(11) That finger print records are kept of Army, Navy and Marine Corps. When men enlist, these are compared, and men who enlist fraudulently are discovered. In case of a second fraudulent enlistment, a man will be sent to prison. Likewise he will be sent to prison in the event of his first fraudulent enlistment, if his record is bad.

(12) That men whose prison records show them to be unfit for the service, or men who have been convicted and sent to state prisons will be tried and again sent to prison in the event of their enlisting fraudulently. Such men will invariably be detected; and, inasmuch as they are undesirable for the service, clemency will not be shown them.

(13) That drunkenness on shore casts discredit on the Navy and on their companions; and that it will not be tolerated.

(14) That they themselves are responsible for securing the proper information in regard to the expiration of liberty, boat hours, train schedules, etc., and that ignorance thereof is no excuse.

(15) That when delivered by civil authorities subsequent to desertion, they must pay the expenses of delivery, reward, etc., and that while so doing, their pay and allotment stop and those dependent on them must go without money.

(16) That even if a man loses pay by sentence of a court-martial, he can, provided he is not sent to prison, earn it back by future good behavior. If he receives an honorable discharge, he may secure the remission of the entire amount; or he can earn one-half of it back if he gets an ordinary discharge.

(17) That it is practicable for a man who desires to leave the service to do so honorably at a very small expense, and that any man who at any time desires to leave the service should adopt that method rather than have the stigma of having been dismissed from the service follow him throughout his life.

(18) That an honorable discharge from the Navy is a very valuable reference when it comes to applying for a position in civil life, whereas no civilian employer cares to hire a man who has been discharged from the Navy with a dishonorable or bad conduct discharge, or as undesirable.

51. Q. If you commit a serious offense during the probationary period, pursuant to sentence of court-martial, what action may the captain take?

52. A. When a man who is serving a sentence which has been mitigated in accordance with the instructions outlined in the preceding paragraphs commits an offense of such a serious nature as, in the opinion of the captain merits a more severe punishment than that of simple termination of the probation, and thus allowing the unexecuted portion of the sentence to be carried into effect, the captain may either order the man's trial by summary court-martial, or recommend his trial by general court-martial. In cases of this character, it is the policy of the Navy Department to require the man to serve both the original sentence and such additional sentence as may be imposed for the offense committed during probation. Where a man's original sentence included discharge from the service which had been conditionally remitted, if he is subsequently sentenced to a period of confinement and discharge for an offense committed while on probation, the Secretary of the Navy, as a rule, remits the former discharge in order to permit the execution of the sentence more recently adjudged.

PART ONE

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WHAT THE SERVICE OFFERS

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1. After a man has mastered the general military details of the profession, the Navy holds forth a number of different specialties with excellent opportunities for instruction and training therein. Early in his enlistment, it will pay every man to decide for which of these numerous branches he deems himself best fitted, constantly bearing in mind the fact that he must, *irrespective of his rating, be first* a MAN-OF-WARSMAN and, secondly, a specialist in his own particular rating.

2. Application and industry in any of the Navy branches, combined with absolute obedience and strict compliance with the rules of military discipline, cannot fail to win for the intelligent man promotion to the rating of chief petty officer. Having attained this rating, men of ambition and ability are often promoted to the rank of warrant officer; and every opportunity is given the warrant officer to fit himself for a commission.

3. In order that men of every rating, not only of the seaman branch, but of all other branches as well, may, early in their enlistment, become aware of some of the opportunities offered them, the following information is given in regard to the various service schools.

4. It is desired to encourage men in general service to qualify for trades. The Bureau of Navigation maintains classes for the instruction of seamen gunners, yeomen, cooks, bakers, and commissary stewards, electricians, painters, ship fitters, carpenters, machinists' mates, etc., and men in general service who have proven themselves desirable may, as far as practicable, be detailed to the service schools. *No one will be recommended for any class, however, who has not been on board a cruising ship for at least four months, and who will not have at least two years of naval service after graduation.* Extension of enlistment may be availed of to satisfy the requirements of service subsequent to graduation.

5. The qualifications necessary for detail to these schools are liable to change without notice, consequently merely an outline of the various requirements is given. For further information a man should apply to his division officer, constantly bearing in mind the fact that a necessary qualification for all classes is that *the applicant must have a good record,* and show

aptitude for the rating desired. And unless the applicant is thoroughly qualified, requests for detail to these classes will not be considered.

Q. Who are SEAMEN GUNNERS?

A. They are graduates of *(a) the ordnance class at Washington, D. C., or (b) the torpedo class at Newport, R. I.

Q. What men are eligible for the ORDNANCE CLASS?

A. Continuous-service men of good record, under 30 years of age, as follows: Gunners' mates and turret captains on re-enlistment, who had an average mark of 3.75 in ordnance during the last two years of enlistment. Petty officers of the seaman branch other than gunners' mates; and seamen who had an average of 3.75 in ordnance during the last two years of their enlistment, and who are specially recommended by their captain. Third-class petty officers so detailed will have their ratings changed to gunners' mates, third class, upon leaving the class, if qualified. This class begins June 1 and December 1 and continues for six months.

Q. What men are eligible for the TORPEDO CLASS?

A. Continuous-service men of good record, under 30 years of age, as follows: Gunners' mates on re-enlistment, who had an average mark of 3.75 in ordnance during the last two years of their enlistment, or when specifically recommended by their captain. Seamen and petty officers, third class, of the seaman branch, on re-enlistment, who had an average mark of 3.75 in ordnance during the last two years of their enlistment, or when specifically recommended by their captain. Third-class petty officers will be required to change their ratings to gunners' mates, third class, upon leaving the class, if qualified. This class begins January 1, May 1 and September 1, and continues for eight months. A special class for machinists' mates, first and second class, has been inaugurated. This class will convene on the same dates as the regular torpedo class, and men to be eligible must be recommended by the commanding officer of a vessel which carries torpedoes. They must be continuous-service men under 30 years of age, and have at least two years remaining on their enlistment at the time of entrance to the class. Machinists' mates who complete this course will have the word "torpedo" entered in their records after their rate, and in all communications concerning such men the term "torpedo" will always be inserted.

Q. Do graduates of the seaman gunners' class receive extra pay, in addition to the pay of their ratings?

*** The ordnance class at Washington, D. C., has been discontinued temporarily.**

A. Yes; $2.20 per month.

Q. In what branches aside from the seaman branch does the Navy maintain schools of instruction?

A. The Navy maintains classes for the instruction of yeomen, cooks, bakers, commissary stewards, electricians, painters, carpenters, ship fitters, machinists' mates, blacksmiths, plumbers, musicians, hospital apprentices, and a class for aeronautics.

Q. What men are eligible for the ELECTRICAL CLASSES at New York and San Francisco?

A. The classes are divided into four parts—two for electricians (general) and two for electricians (radio), as follows: (a) *Class for general electricians.* Continuous-service men under 30 years of age, as follows:

Seamen and petty officers, third class, of the seaman branch, on re-enlistment, who have an average mark in proficiency in rating of not less than 3.75 for the last two years of their enlistment, or who are specifically recommended by their commanding officer for this course of instruction. No technical or theoretical knowledge of electricity is required for entrance to this section.

(b) *Applicants for electricians (general) other than continuous-service men* must be given careful examination on board ship to determine their ability as electricians, and should either be electricians by trade or have a sufficient knowledge of the subject to form a good basis for further instruction. For example, they should be able to do elementary problems in arithmetic, most elementary work in mechanical drawing and sketching; they should be able to name the parts of a dynamo and a motor; they should be able to explain the use of the ordinary tools found in a dynamo room. They should have had at least six months' experience in the dynamo room on board ship, and have shown aptitude for electrical work.

(c) *Class for radio electricians.*

Applicants for electricians (radio) must be able to receive at least 10 words per minute in the Continental Code, write legibly, and spell correctly, at a speed of 25 words per minute, and have a grammar school knowledge of arithmetic.

Third-class petty officers who complete any of these courses will have their ratings changed to electricians, third class.

Q. What classes are maintained in the ARTIFICER SCHOOL at Norfolk, Va.?

A. Classes for the instruction of SHIP FITTERS, SHIPWRIGHTS, BLACKSMITHS, PLUMBERS AND FITTERS, and PAINTERS.

Q. What men are eligible for these classes?

A. Men who can show that they have had experience in the trade they desire to follow. *Such necessary experience can be obtained on board ship,* while detailed as a "striker" to the artificer whose trade you wish to learn.

Q. What men are eligible for the COPPERSMITHS' CLASS at Charleston, S. C.?

A. Men who have a fundamental knowledge of this trade. As the service is in need of coppersmiths, requests for instruction in this class should be encouraged.

Q. What men are eligible for the CLASS FOR INSTRUCTION IN GASOLINE ENGINES at Charleston, S. C.?

A. Men holding the ratings of fireman, first or second class, and oilers are eligible for this course. Men must be specially recommended for this instruction, have good records, and a mark of at least 4 in mechanical ability. The Bureau of Navigation will give preference to men serving in other than first enlistment.

Q. What men are eligible for the MACHINISTS' MATES CLASS?

A. Continuous-service men under 30 years of age, as follows: (1) Water tenders, oilers and firemen, first class, on reenlistment *with honorable discharge,* who have an average mark of 3.75 in mechanical ability and knowledge of marine machinery for the last two years of their enlistment. The course of instruction lasts for 16 months, and on completion the men are examined and rated first- or second-class machinists' mates, if qualified.

Q. What men are eligible for the YEOMEN CLASSES at Newport and San Francisco?

A. Men who are proficient in penmanship, composition, spelling, elementary arithmetic, geography, current history, and typewriting, and who have the specific recommendation of their captain.

Continuous-service men under 30 years of age may, on recommendation of their commanding officer, be admitted to this school, even if they cannot pass the typewriting test, provided they have the necessary qualifications as outlined above. Men so admitted must be seamen, firemen, or petty officers, third class, of the seaman branch.

Q. What men are eligible for the CLASS FOR COMMISSARY STEWARDS at San Francisco or Newport?

A. Continuous-service men who have a fair knowledge of arithmetic, are able to write a legible hand, and have had considerable experience as cooks and bakers.

Q. What men are eligible for the CLASS FOR COOKS AND BAKERS at San Francisco or Newport?

A. Men specifically recommended who have a fair knowledge of the trade.

Q. What men are eligible for the MUSICIANS' CLASSES at Norfolk or San Francisco?

A. Men specifically recommended who are able to read music and play easy grades on piano, string, or any brass instrument.

HOSPITAL APPRENTICES.—A school for the training of hospital apprentices has been established at the training station, Newport, R. I. Men who enlist as hospital apprentices on the East coast, including Great Lakes, should be transferred to that station for this course of training. There is a similar station at the training station, San Francisco, California, for the training of men enlisting on the Pacific coast.

Q. What men are eligible for instruction in the AERONAUTIC CLASS at Pensacola?

A. Classes of men to be trained for the air service are detailed every three months. The commander-in-chief, Atlantic fleet, selects these classes of enlisted men, and all requests for this detail should be made to him. The classes of enlisted men are composed of:

Eight chief petty officers, seaman branch.

Two chief petty officers, preferably machinists' mates.

Two petty officers, first class, preferably carpenters' mates.

Two petty officers, second class, preferably electricians or gunners' mates.

Two seamen.

Enlisted men to be eligible for this duty must have had at least two years' service in a sea-going ship, must be under 40 years of age, and must be recommended by their commanding officers on account of their very good records.

NOTE.—It must be remembered that the ship itself affords an excellent training school in various branches, and that a man of the right type will obtain rapid advancement in his chosen branch even if he fails to be designated for one of these shore training schools.

Q. What advantages are offered to the man who takes every opportunity to LEARN HOW TO BECOME A GOOD SEAMAN?

A. Opportunity for advancement to the rating of a petty officer of the seaman branch—master-at-arms, coxswain, boatswain's mate, turret captain, gunner's mate, quartermaster; then to chief petty officer of the seaman branch—chief master-at-arms, chief boatswain's mate, chief gunner's mate, chief turret captain, chief quartermaster; the possibility of advance-

ment to WARRANT RANK, either boatswain or gunner, and finally to commissioned warrant rank—chief boatswain or chief gunner—with the chance of obtaining a COMMISSION in the line of the Navy. The ship itself is, needless to say, the only training school for the seaman.

Q. What are the regulations regarding the advancement in rating, or PROMOTION OF ENLISTED MEN?

A. (1) The captain fills vacant positions of petty officers, issuing appointments.

(2) The Bureau of Navigation issues permanent appointments to chief petty officers only.

(3) No man shall be advanced in rating more than one class at a time, except by special authority, in each case, from the Bureau of Navigation. A petty officer must complete a full probationary period of 12 months' service before being given an appointment in a higher rating. Water tenders and oilers, however, may be appointed from firemen, first class, who are qualified to fill those ratings, and men of either rate are eligible to the rating of machinists' mates, first class, if qualified.

(4) When necessary, owing to vacancies, a man, if qualified, may be given the duties of a rating higher than the one he holds, but this does not entitle him to the pay of the higher rating.

(5) Petty officers are selected, as far as possible, from continuous-service men.

Q. What is an APPOINTMENT?

A. When a man is selected for the position of a petty officer, the commanding officer shall issue to him an appointment which may be revoked at any time by the commanding officer of the ship on board which he is serving, should the petty officer prove not qualified for the position he may be holding. Petty officers shall receive the pay of the rating designated in their appointments, except that chief petty officers draw the lower rate of pay, until such time as they qualify by examination, and are given permanent appointments.

Q. What is a PERMANENT APPOINTMENT?

A. When a chief petty officer has served satisfactorily in all respects under an appointment issued by his commanding officer for a probationary period of 12 months, and has not less than an average of 4.5 each in proficiency and conduct for at least two years, the commanding officer recommends him to the department and submits his record. Permanent appointments will be issued by the Bureau of Navigation to chief petty officers only after their fitness for promotion has been shown before a board consisting of three officers not attached to the

ship on which the candidate is serving, or, in the case of a chief pharmacist's mate, before a board similarly composed of medical officers. The examination shall show that the candidate is in all respects fitted, under such conditions as the Bureau of Navigation may prescribe, to fill the rating in which he seeks a permanent appointment.

Q. What about ADVANCEMENT and TRANSFERS IN RATING?

A. Should a petty officer holding an appointment in any rating be advanced to the next higher, he shall be given an appointment in the new rating, and be required to serve under such appointment during the probationary period of 12 months.

Should a petty officer holding an appointment in any rating be transferred to another rating in the same class, he shall be given an appointment in the said rating, and be required to serve during the probationary period of 12 months. Service under an appointment counts as probationary service only for the next higher rating in the same branch, or subdivision of a branch; thus, service as a boatswain's mate, second class, does not count for advancement to quartermaster, first class.

Q. A petty officer must serve satisfactorily in all respects under an appointment for a period of 12 months prior to his being recommended for advancement. In what capacity must this entire probationary period be spent?

A. In the performance of duties which will indicate his qualification for the rating in which he holds an appointment.

Q. Under what circumstances may a petty officer holding a permanent appointment be disrated?

A. By sentence of a general or a summary court-martial, or deck court.

Q. Who may revoke an acting appointment, thus disrating the petty officer holding it?

A. The captain.

Q. Who are eligible for appointment as WARRANT OFFICERS?

A. Enlisted men who serve continuously the prescribed number of years on board cruising vessels, with good records, and reach the grade of chief petty officer, or first-class petty officer, are eligible for examination for appointment as warrant officers. The warrant officers are boatswains, gunners, carpenters, machinists, pharmacists, and pay clerks. The pay and allowances of warrant officers vary from $1538 to $2359 a year. Warrant officers, after six years' service at such, having passed an examination, are commissioned as chief boatswains, chief gunners, chief carpenters, chief machinists,

chief pharmacists and chief pay clerks. They rank with, but after, ensigns. Their pay and allowances vary from $2240 to $2800 a year. After six years from date of commission, officers of these grades, on the active list, with creditable records, receive the pay and allowances of lieutenants (junior grade), and, after 12 years from date of commission, the pay and allowances of lieutenants (a maximum rate of pay of $3696 per year). They may retire after 30 years' service, at the discretion of the President, with three-fourths of their highest pay.

Q. Who are eligible for appointment as ACTING PAY CLERKS?

A. Enlisted men of any branch who are citizens of the United States and who hold acting or permanent appointments as chief petty officers. They must have served at least three years as enlisted men, and at least two years of this service must have been on board a cruising vessel of the Navy.* No person shall be appointed a chief pay clerk, pay clerk or acting pay clerk unless his accumulated previous service in the Army, Navy and Marine Corps, together with his possible future service prior to attaining the age of 62 years will amount to at least 30 years. Prior to appointment as acting pay clerks, candidates must pass a physical, a mental, a moral and a professional examination. After one year's satisfactory service as acting pay clerk, a candidate may, subsequent to examination, be appointed a pay clerk.

Q. What are the necessary qualifications for commission as CHIEF PAY CLERK?

A. After six years' service as acting pay clerk and pay clerk, candidates who successfully pass an examination shall be commissioned chief pay clerks. Chief pay clerks have the rank, pay and allowances of chief boatswains.

Q. What advantages in regard to appointment as assistant paymasters in the Navy are offered to chief pay clerks and pay clerks?

A. The age limit for appointment—21 to 26 years in the case of other candidates—is increased. To be eligible for appointment assistant paymasters, pay clerks and chief pay clerks must be between the ages of 21 and 35 years.

Q. Is it possible for warrant officers to obtain COMMISSIONS in the line of the Navy?

* This proviso does not apply to such persons as were serving in the Navy as paymasters' clerks during the period from September 1, 1913, to October 31, 1913.

*A. Yes. Warrant officers, including those promoted to chief, within the age limit of 35 years, who have served not less than four years as warrant officers, and who can pass a satisfactory examination, may obtain commissions in the line of the Navy.

Q. How may seamen be promoted directly to warrant rank?

A. Seamen distinguishing themselves in battle, or by extraordinary heroism in the line of their profession, may be promoted to the rank of warrant officer, if found fitted, upon the recommendation of their commanding officer approved by the flag officer and the Secretary of the Navy; in addition they receive a gratuity of $100 and a medal of honor.

Q. HOW MAY ENLISTED MEN OBTAIN APPOINTMENT TO THE NAVAL ACADEMY?

A. The Secretary of the Navy is allowed 25 appointments annually from the enlisted men of the Navy who are citizens of the United States, and not more than 20 years of age on the date of entrance to the Naval Academy. They must have served not less than one year as enlisted men on the date of entrance. Such appointments are made in order of merit from candidates who have, in competition with each other, passed the mental examination required for entrance to the Naval Academy, as well as the required physical examination. The department has fixed the "date of entrance" referred to as August 15 of each year. All candidates who will have been in the service less than one year at that time or who will become 20 years of age prior to that date are therefore ineligible for examination. If you are eligible for such appointment and you desire to take the competitive examination, you must submit your name to your commanding officer before January 15. The entrance examinations are held the third Tuesday in April of each year; and should you decide subsequent to January 15 and prior to the date of examination that you wish to compete, you may be allowed to do so, although it is far preferable that you submit your name before January 15. The subjects in which the candidates are examined are as follows: Spelling, Grammar, Geography, Arithmetic, United States History, Algebra, Geometry. After the relative standing of the candidates passing the examination has been made up, the 25 highest on the list will be directed to report at the Naval Academy for physical examination, and, if found qualified, will be appointed.

* This, at present, does not apply to carpenters, pharmacists, pay clerks, chief carpenters, chief pharmacists and chief pay clerks; but pharmacists and chief pharmacists are eligible for commissions in the medical corps, and pay clerks and chief pay clerks are eligible for commission in the pay corps.

By a recent decision of the department, marines as well as enlisted men of the Navy, are eligible for appointment as midshipmen at the Naval Academy, provided they meet with the requirements outlined above.

Q. Who are known as CONTINUOUS-SERVICE MEN?

A. Any person holding an honorable discharge, or an ordinary discharge with recommendation for re-enlistment, who re-enlists within four months from the date of said discharge, is given a continuous-service certificate. *If he holds an honorable discharge,* he is allowed full pay during the four months between the expiration of one enlistment and the beginning of the next. The regular pay for each rating in the Navy is increased $5.50 per month during the second period of service, and there is a further increase of $3.30 per month during each subsequent period of service; but only enlisted men who are citizens of the United States, and whose second and subsequent periods of service each follow next after service in the Navy that was terminated by reason of expiration of enlistment, receive this increased pay.

Q. What are the REWARDS for LONG SERVICE?

A. (1) Duty on receiving ships after 25 years' service.

(2) Any person who has been honorably discharged is entitled to a home and a ration on a receiving ship during the four months that may elapse between his enlistments. Such men are not called upon to take part in drills, nor to perform any labor, except to help in the usual morning watch work, cleaning the part of the ship in which they live. They are granted such leaves of absence as they may desire.

(3) After 30 years' service, an enlisted man may retire and receive three-fourths of the pay of the rating he holds when retired, and an additional allowance of $15.75 per month in place of quarters and rations. This will enable a man to live comfortably for the remainder of his life. There are very few chances for any such reward as this in civil life.

Q. What men are entitled to PENSION?

A. Any disabled person who has served as an enlisted man in the Navy for 10 years, and has not been discharged for misconduct, may apply for aid from the surplus income of the naval pension fund. This application may be approved upon the recommendation of a board of not less than three naval officers, in suitable amount to be finally approved by the Secretary of the Navy. After 20 years of service, any enlisted man discharged from sea service by reason of age or infirmity, who has not been discharged for misconduct, shall, if he so elects, be entitled to a pension equal to half pay, or be admitted to the

Naval Home, Philadelphia. It is only in the naval and military services that a man's pay goes on just the same, whether he is sick or well, and that he has the free benefit of skilled medical attention, trained nurses, the best of medicine, and well-appointed hospitals.

Q. What MEDALS may enlisted men receive?

A. Medals of honor, life-saving medals, good-conduct medals, sharpshooters' medals.

Q. Who receive MEDALS OF HONOR?

A. Any enlisted man in the Navy or Marine Corps, recommended by his captain, who has distinguished himself in battle, or displayed extraordinary heroism in the line of his profession, may receive a medal of honor and a gratuity of $100.

Q. Under what circumstances are LIFE-SAVING MEDALS awarded?

A. Gold life-saving medals are awarded to those in the Navy or Marine Corps, who may by extreme and heroic daring have endangered their lives in the endeavor to save life from the perils of the sea in waters over which the United States has jurisdiction, or on an American vessel. Silver life-saving medals may be awarded in cases not sufficiently distinguished to deserve the gold medal.

Q. What is a GOOD-CONDUCT MEDAL?

A. Any enlisted person in the Navy serving under continuous-service certificate, or in an enlistment subsequent to a previous enlistment terminated by reason of expiration of enlistment, who, upon expiration, or within three months before the expiration of his term of enlistment, shall be recommended by his captain for obedience, sobriety, industry, courage, neatness and proficiency shall receive a good-conduct medal. Any such person who has received one medal will, if recommended, at the end of any subsequent four-year term of enlistment, be given, in place of a medal, a clasp, which shall be worn above the medal on the same ribbon. A man serving under a continuous-service certificate, or in an enlistment subsequent to a previous enlistment terminated by reason of expiration of enlistment, who has extended his enlistment, shall be recommended for a good-conduct medal, or clasp, for the four-year term for which he enlisted, if qualified as above. But a man who receives a good-conduct medal, or clasp, at the expiration of his term of enlistment of four years shall not again be given a good-conduct medal upon discharge from an extension of that enlistment for any period less than four years. No man shall be deprived of a good-conduct medal, or clasp, except by sentence of a general court martial. Each enlisted

man of the Navy receives 82 cents per month in addition to the pay of his rating for each good-conduct medal, pin, or bar which may have been awarded him.

In order to be recommended for a good-conduct medal a man must have the following *minimum* marks:

Petty Officer.	Lower Ratings.	In—
4.5	4.0	Proficiency in rating.
4.5	4.5	Sobriety.
4.5	4.5	Obedience.

Q. In case of the death of an enlisted man, is any GRATUITY paid to those dependent upon him?

A. Immediately upon official notification of the death from wounds or disease, not the result of his own misconduct, of any enlisted man on the active list of the Navy, there is paid to his widow, or to any other dependent relative of such enlisted man previously designated by him, an amount equal to six months' pay at the rate received by such enlisted man at the day of his death, less $35 to defray the expenses of interment.

Q. Who are eligible for enlistment in the FLEET NAVAL RESERVE.

A. (1) Men who have been, or may be entitled to be, honorably discharged from the naval service, after not less than one four-year term of enlistment, or after a term of enlistment during minority, who shall have enrolled in the Naval Reserve Force.

(2) Any enlisted man, at the expiration of a term of enlistment, who may be then entitled to an honorable discharge, after 16 years' naval service.

(3) Any enlisted man with 20, or more, years' naval service.

In all the above cases the men must be citizens of the United States. They may be transferred only upon voluntary application and in the rating in which then serving, and the men so transferred shall be continued in the Fleet Naval Reserve until discharged by competent authority.

Q. What is the pay of men enrolled in the Fleet Naval Reserve?

A. (1) Those with less than eight years' naval service, $50 a year.

(2) Those with eight, or more, and less than 12 years' naval service, $72 a year.

(3) Those with 12, or more, years' naval service, $100 a year.

(4) Those with 16, or more, years' naval service, one-third of the base pay they were receiving at the close of their last naval service, plus all permanent additions thereto.

(5) Those with 20, or more, years' naval service, one-half of the base pay they were receiving at the close of their last naval service, plus all permanent additions thereto.

NOTE.—In computing the above periods of naval service, a complete enlistment during minority, and any enlistment terminated within three months prior to the expiration of the term of enlistment by special order of the Secretary of the Navy is considered as four years' service.

In the case of men who have 16, or more, years' naval service to their credit, the pay authorized in paragraphs (4) and (5) above is increased 10 per cent for all men who may be credited with extraordinary heroism in the line of duty, or whose average marks in conduct for 20 years, or more, are not less than 95 per cent of the maximum.

Q. In what light does the Government regard this pay to members of the Fleet Naval Reserve?

A. As retainer pay for the obligation on the part of such members to serve in the Navy in time of war, or national emergency.

Q. Under what circumstances is the retainer pay, as authorized above, reduced?

A. The Secretary of the Navy is authorized to assign any member of the Fleet Naval Reserve to active duty for training on board ship, upon the application of such member, but any member who has failed to perform three months' active service with the Navy in any term of enrollment shall, on the next re-enrollment, receive retainer pay only at the rate of $12 a year, until such time as he shall have completed three months' active service. Any pay due any member of the Fleet Naval Reserve may be forfeited, when so ordered by the Secretary of the Navy, upon the failure, under such conditions as the Secretary may prescribe, of such man to report for inspection.

Q. How long are the terms of enrollment in the Fleet Naval Reserve?

A. Four years.

Q. Is there any increase in retainer pay for re-enrollment?

A. Yes. Men enrolling in the Fleet Naval Reserve within four months of the date of the termination of their last term of enlistment in the naval service, or re-enrolling within four months of the date of the termination of their last term of enrollment receive an increase of 25 per cent of their retainer pay for each such enrollment. Also men who have enrolled in the Fleet Naval Reserve within four months of the date of their discharge from the regular naval service shall, upon re-enlistment in the regular naval service within four months

of the date of discharge from the Fleet Naval Reserve, be entitled to the same gratuity and additional pay as if they had re-enlisted in the regular naval service within four months of discharge therefrom.

Q. Is it possible for a man who enrolls in the Fleet Naval Reserve to receive a warrant or a commission?

A. Yes. Members of the Fleet Naval Reserve who have established their qualifications by examination, to the satisfaction of the Secretary of the Navy, may be given warrants or commissions in the Fleet Naval Reserve in the grades of boatswain, gunner, carpenter, machinist, pharmacist, pay clerk, ensign for deck or engineering duties, or in the lowest grades of the staff corps. Those so warranted or commissioned are not deprived of their retainer pay, allowances, or gratuities to which they would otherwise be entitled.

Q. Are members of the Fleet Naval Reserve entitled to retirement?

A. Yes. They may, upon their own request, after completing 30 years' service, including naval and fleet naval reserve service, be placed on the retired list of the Navy, with the pay they were then receiving, plus the allowances to which enlisted men of the same rating are entitled on retirement after 30 years' naval service.

Q. That part of the uniform clothing outfit are members of the Fleet Naval Reserve required to keep on hand?

A. One blue overshirt, one suit blue undress, one suit undress white, one blue cap, one white hat, one pair leggins, one neckerchief, one jersey, one overcoat, one watch cap.

Q. WHEREIN DOES THE ESTABLISHMENT OF THE FLEET NAVAL RESERVE PRACTICALLY PROVIDE FOR PROGRESSIVE RETIREMENT?

A. If you are transferred to the Fleet Naval Reserve after you have completed 16 years' service in the Navy, you are paid one-third of the base pay, plus permanent additions, that you were receiving at the close of your last service in the Navy. If you are transferred to the Fleet Naval Reserve after you have completed 20, or more, years' service in the Navy, you are paid one-half of the base pay, plus permanent additions, that you were receiving at the close of your last service in the Navy.

Q. Where may enlistments for the Naval Reserve be made?

A. At any Navy Recruiting Station, or on board of any vessel of the Navy in commission.

PART ONE

"C"

ENLISTMENTS, DISCHARGES, COURTS MARTIAL

PART ONE.

"C."

ENLISTMENTS, DISCHARGES, COURTS-MARTIAL.

Q. In what ratings may FIRST ENLISTMENTS be made in the Navy?

A. (1) No person shall be first enlisted in the Navy who is not a citizen of the United States, or a native of the insular possessions. First enlistment is made only in the ratings of the following table, and between the ages therein specified:

Rating.	Age.
Seamen	21 to 30
Seamen, 2d class	18 to 30
*Apprentice seamen	17 to 25
Landsmen. (Not for seaman branch.)	18 to 25
Shipwrights	21 to 30
Blacksmiths	21 to 30
Plumbers and fitters	21 to 30
Sailmakers' mates	21 to 30
Machinists' mates, 1st class	21 to 30
Machinists' mates, 2d class	21 to 30
Electricians, 2d class	21 to 30
Electricians, 3d class	21 to 30
Boilermakers	21 to 30
Ship fitters, 2d class	21 to 30
Coppersmiths	21 to 30
Firemen, 1st class	21 to 30
Firemen, 2d class	21 to 30
Firemen, 3d class	21 to 30
Hospital apprentices, 1st class	21 to 28
Hospital apprentices, 2d class	18 to 25
Bakers, 2d class	21 to 30
Mess attendants, 3d class	18 to 30
Ship's cooks, 4th class	18 to 30
Musicians, 1st class	21 to 30
Musicians, 2d class	21 to 30
Painters, 3d class	21 to 30

(2) Men for the insular force may be enlisted in the following ratings, and assigned only to vessels in service in the Philippines and at Guam:

* Must have consent of parents, if under 18.

Rating.	Age.
Native seaman	18 to 25
Native seaman, 2d class	18 to 25
Native machinist's mate, 1st class	21 to 35
Native machinist's mate, 2d class	18 to 25
Native fireman, 1st class	18 to 35
Native fireman, 2d class	18 to 25
Native fireman, 3d class	18 to 25
Native steward	18 to 35
Native cook	18 to 35
* Native mess attendant	16 to 25

(3) Persons possessing a mechanical trade may be enlisted as landsmen even if over 25, provided they are under 30; and a landsman enlisted for a special position shall have the fact stated on his service record.

Q. Who may not be enlisted?

A. (1) No person shall be enlisted or re-enlisted who is not a citizen of the United States, or a native of the insular possessions. But this does not apply to men who, upon expiration of enlistment, hold an honorable discharge or a continuous-service certificate endorsed with an honorable discharge, or an ordinary discharge with recommendation for re-enlistment. Such men, irrespective of their citizenship, shall be immediately re-enlisted, provided physically and otherwise qualified.

(2) No minor under the age of 16, no insane or intoxicated person, and no person who has deserted in time of war from the naval or military service of the United States, or who has deserted from the Coast Guard Service shall be enlisted.

(3) No one who has been in the naval or military service of the United States shall be enlisted without showing his discharge therefrom.

(4) Beneficiaries and pensioners who have been admitted to the Naval Home shall not be enlisted.

(5) The holder of a continuous-service certificate endorsed "discharged with bad-conduct discharge," "dishonorably discharged," or "not recommended for re-enlistment," shall not be re-enlisted.

Q. What are the instructions regarding the enlistment of APPRENTICE SEAMEN?

A. (1) The enlisting and training of apprentice seamen is conducted under the direction of the Bureau of Navigation.

(2) A person enlisted as an apprentice seaman must be between the ages of 17 and 25. If under 18 years of age, he

* Must have consent of parents, if under 18.

must sign an agreement to serve in the Navy until he is 21, and he must have the consent of his parent or guardian (whenever possible, he must be accompanied by his parent or guardian). If the candidate is 18 years of age, or over, he is enlisted for four years.

(3) He must be able to read and write, and be of robust frame, intelligent, of perfectly sound and healthy constitution, and free from any physical defects or malformation.

(4) No person who has been convicted of crime, or who is known to be of bad character, shall be enlisted.

(5) Apprentice seamen are entitled to the benefits of the naval pension laws.

(6) As soon after enlistment as practicable, apprentice seamen are transferred to a training station. The large training stations are at Newport, Norfolk, San Francisco, and Great Lakes, North Chicago. At the termination of the period of instruction at the training station, apprentice seamen are transferred to cruising ships.

Q. What is the BAILEY MEDAL, and how is it awarded?

A. Examinations are held both on the Atlantic and the Pacific coasts for the Bailey Medal, instituted by the late Rear Admiral Theodorus Bailey for the purpose of inciting the apprentices of the United States Navy to greater effort in acquiring proficiency in their duties. The medal is awarded yearly, as soon after December 31 as possible, to the apprentice seaman enlisted for minority who attains the highest average on each coast.

Q. May apprentice seamen be discharged for inaptitude?

A. Yes; the commanding officer of a training station appoints a permanent board of officers, who consider, every quarter, the record and the relative merit of each apprentice seaman, and recommend for discharge such as show no aptitude for the service.

Q. What is the TERM OF ENLISTMENT for all ratings?

A. Four years, except for those who are enlisted during minority (under 18 years of age), who sign an agreement to serve in the Navy until 21 years of age.

Q. May the term of enlistment be extended, without reenlisting for another term of four years?

A. Yes; the term of enlistment of any man enlisted for four years may, by his voluntary written agreement, be extended for a period of either 1, 2, 3 or 4 full years from the date of the expiration of the then-existing four-year term of enlistment. An agreement to extend an enlistment must be made prior to discharge, and a man serving an extension of less than four

years may, before discharge, further extend his term repeatedly by one or more years; the total of all extensions not to exceed four full years from the date of expiration of the original four-year term. But, of course, no one may so extend his term of enlistment whose retention in the service is not desirable, nor may any one who has enlisted for minority extend his enlistment; he must re-enlist for four years. The privilege of extension of enlistment applies also to marines.

Q. WHERE are ENLISTMENTS AUTHORIZED?

A. (1) At naval rendezvous and on board receiving ships established by the Navy Department.

(2) On board cruising ships when instructed by the Bureau of Navigation. Any honorably discharged man or any man receiving an ordinary discharge with recommendation for re-enlistment may be re-enlisted on board a ship in order to fill the vacancy created by his discharge.

(3) On board vessels of the Bureau of Fisheries to fill vacancies.

(4) At naval stations, when necessary to fill vacancies in an established complement of receiving or station ships, tugs, or other yard craft.

Q. Is a PHYSICAL EXAMINATION necessary?

A. Yes; prior both to enlistment and to re-enlistment.

Q. What are the ratings in which RE-ENLISTMENTS may be made in the Navy?

A. In any one of the ratings given in the table for first enlistments, without regard to age limits, provided the applicant is physically and otherwise qualified for enlistment in that rating.

A petty officer, honorably discharged with a permanent appointment, who presents himself for re-enlistment within four months from date of discharge, shall, if physically and otherwise qualified, be enlisted in the rating of the permanent appointment under which he was serving at the time of his discharge. Men holding certificates as seamen gunners are entitled to re-enlist as such. Petty officers, other than chiefs who have been discharged in their ratings as petty officers and whose records and conduct are satisfactory, shall be enlisted in the rating held on discharge, provided such re-enlistment is within four months of date of discharge. Chief petty officers not holding permanent appointments will be re-enlisted as petty officers, first class, and their appointments as chief petty officers renewed. Men holding the following ratings may be re-enlisted within four months from date of honorable discharge, as indicated: Cooks and stewards holding certificates of qualifica-

tion from the Bureau of Navigation, in the rating designated on such certificates; ship's cooks, third and fourth class, bakers, second class, and mess attendants in the rating and class in which discharged. Other persons can be re-enlisted only in one of those ratings in which first enlistment is authorized. Every continuous-service man holding an honorable discharge, or a continuous-service certificate on which there is endorsed an honorable or an ordinary discharge with recommendation for re-enlistment, on presenting himself for re-enlistment at any naval rendezvous or receiving ship, or on board any cruising ship not in the presence of a rendezvous or receiving ship, within four months from the date of his discharge, shall be immediately re-enlisted, regardless of the ship's complement, provided he is physically and otherwise qualified and answers to the descriptive list of his discharge. In case such a continuous-service man be found physically disqualified, the copy of his medical examination shall be forwarded to the Navy Department. Pending a reply from the department, the applicant for re-enlistment may, if he so chooses, remain during such time on board ship.

Q. Who may be enlisted as seamen or seamen, second class?

A. Only honorably discharged men, or men holding ordinary discharges and recommended for re-enlistment, except by authority of the Bureau of Navigation.

Q. What experience must a man have had in order to be enlisted as a fireman, first class?

A. Two years' experience at sea in a fireroom. He must be able to pass an examination.

Q. What qualifications are required for enlistment as a machinist's mate?

A. The candidate must be a machinist by trade, must know the names and uses of the various parts of marine engines and boilers, must be able to perform work with various tools in a machine shop, including bench work, must be able to write legibly, and must understand arithmetic. Machinists who have had experience at sea with marine engines for one year may be enlisted as machinists' mates, first class; those who have had no experience at sea, as machinists' mates, second class. An examination is required.

Q. What qualifications are required for enlistment as an electrician?

A. A candidate must be an electrician by trade, must know the names and uses of the various parts of a dynamo and a dynamo engine, must be familiar with the ordinary types of switchboard and methods of wiring, must be able to write

legibly, and must understand arithmetic. Competent operators with the Morse telegraphic key, or men with a foundation in radio telegraphy, may be enlisted for instruction at electrical schools for electricians (radio), though their knowledge of electricity may be slight. Any man in the lower ratings on board ship who shows aptitude for the duties of electrician (radio) may be detailed for such duty irrespective of complement, and after serving six months in such detail and showing proficiency for such duties, and whose conduct has been satisfactory, may be given the rating of electrician (radio), third class.

Q. When is an enlisted man entitled to DISCHARGE?

A. Only upon the expiration of his term of enlistment; but any enlisted man *may* be discharged at any time within three months before the expiration of his term of enlistment without prejudice to any right, privilege, or benefit that he would have received, except pay and allowances for the unexpired period not served. No enlisted man is discharged prior to three months before the expiration of his term of enlistment except by special order of the Secretary of the Navy, or for one of the following causes: Undesirability, inaptitude, physical or mental disability, unfitness, by sentence of court-martial, or by purchase. In every case the recommendation for such discharge must be made by the immediate commanding officer under whom the man may be serving. Applications for discharge which reach the department in any way except through said commanding officers are, without exception, disregarded. Any person discharged during the first six months of a first enlistment for any cause other than disability incurred in the line of duty shall have checked against his accounts, prior to discharge, the cost of such portion of the outfit allowed on first enlistment that he may have drawn.

Q. What are the instructions in regard to FURLOUGH WITHOUT PAY?

A. The department is authorized to grant furlough without pay to enlisted men for a period covering the unexpired portion of their enlistment. Such furlough is granted under the same conditions, and in place of discharge by purchase, or by special order of the department. Enlisted men so furloughed are subject to recall in time of war, or national emergency, to complete the unexpired portion of their enlistment. All applications for furlough without pay must show the reason why the applicant wishes the furlough and state that he waives all claim to transportation home. They must be forwarded through regular official channels to the Bureau of Navigation.

Applications made with the manifest purpose of avoiding duty on particular ships or stations will not be granted. Furlough without pay is a privilege, and not a right. It will be granted only when the efficiency of the service will not be manifestly impaired thereby.

Q. What is the date of expiration of enlistment?

A. In case of enlistment during minority, it is the day just preceding a man's 21st birthday. In the case of a four-year enlistment, it is the day of the month next preceding the fourth anniversary of the date on which the man enlisted.

Q. What is an HONORABLE DISCHARGE, and who gets it?

A. Any enlisted man who, upon the expiration of his enlistment, is recommended by his commanding officer for fidelity, obedience, and ability during his term of service, and who is a desirable person to retain in the Navy, receives an honorable discharge. In deciding upon the claims of an enlisted man to honorable discharge, the captain gives due weight to the reports of other captains under whom a man may have served during his current enlistment. Such reports are, of course, shown on a man's service record. Men discharged before the expiration of enlistment, upon recommendation of a medical survey, for injuries received or disabilities incurred in line of duty, are given honorable discharges, provided their records so warrant.

In order for a man to be recommended for honorable discharge, he must have the following *minimum* marks:

Petty Officer.	Lower Ratings.	In—
3.0	3.0	Proficiency in rating.
4.0	3.5	Sobriety.
4.0	3.5	Obedience.

Marks for any period are based solely upon the man's behavior and ability during that time. *Proficiency in rating* is the summation of the various elements that go to make up the service character of the naval petty officer or enlisted man; in short, his value to the service in his particular rating.

Marks are assigned quarterly to each man by the division officer or the head of a department. They are based on a scale of from 0 to 5, 5 representing perfect, or 100 per cent.

Q. How is it possible to obtain an honorable discharge after one year's service?

A. Any person who has enlisted in the Navy or Marine Corps for the first time, on or after August 29, 1916, shall, in

time of peace, if he so desires, receive discharge therefrom without cost to himself during the month of June or December, respectively, following the completion of one year's service at sea. An honorable discharge may be granted, under these circumstances, but when so granted it does not entitle the holder, in case of re-enlistment, to the benefits of an honorable discharge granted upon completion of an enlistment. That is, it does not entitle him to the honorable discharge gratuity described in the following paragraphs.

Q. What are the BENEFITS OF HONORABLE DISCHARGE?

A. (1) A sense of self-respect arising from the knowledge that you have served well and honorably in the Navy of your country for a term of four years.

(2) If you desire to re-enlist within four months after the expiration of your enlistment, you will, *provided you can present an honorable discharge*, or account in a satisfactory manner for its loss, receive a GRATUITY of four months' pay, equal in amount to that which you would have received had you been employed in actual service.

(3) An honorable discharge is a certificate of reliability. Consequently the possession of an honorable discharge will assist you in obtaining promotion or detail for duty where reliable men are needed. An honorable discharge will be of great assistance in obtaining a good position outside the service.

Q. Who gets an ORDINARY DISCHARGE?

A. (1) All persons not recommended by their captain for fidelity, obedience, and ability during their term of service.

(2) All who are discharged before the expiration of their term of enlistment at their own request, or for their own convenience.

Q. How is it shown whether a man is recommended for re-enlistment?

A. The captain indorses across the face of the discharge, "Recommended (or *not* recommended) for re-enlistment."

In order to be recommended for re-enlistment a man must have the following *minimum* marks:

Petty Officer.	Lower Ratings.	In—
3.0	2.5	Proficiency in rating.
3.5	3.0	Sobriety.
3.0	3.0	Obedience.

Q. If a man had a discharge not recommending him for re-enlistment, why could he not omit to show the discharge when applying for re-enlistment?

A. Because, if he had ever been in the service, he would not be re-enlisted until he had shown his discharge. If he had lost it, the case would be referred to the Navy Department. If he succeeded in re-enlisting, he would be guilty of fraudulent enlistment, and he would be liable to court-martial.

Q. When is a DISHONORABLE DISCHARGE given?

A. Only by sentence of a general court-martial.

Q. When is a BAD-CONDUCT DISCHARGE given?

A. By sentence of a general or a summary court-martial.

Q. Is it possible to discharge men for UNDESIRABILITY, INAPTITUDE, or UNFITNESS, prior to the expiration of their enlistments?

A. Yes. The captain may discharge such men as, in his opinion, should be discharged for undesirability, inaptitude, or unfitness; and men so recommended, not to exceed one per cent of any command in any three months, may be discharged in any part of the United States north of Key West, regardless of their ratings, except continuous-service men, whose cases are referred to the Navy Department. Men serving abroad who are recommended for discharge on these grounds are sent to the United States by the first government conveyance and discharged. A man is not discharged under this provision without being given an opportunity to make any statement he may desire in his own behalf.

Q. Under what circumstances may men be discharged outside the limits of the United States?

A. (1) Enlisted men of the insular force.

(2) By order of the Navy Department.

(3) In accordance with the sentence of a general court-martial.

(4) Upon expiration of the term of enlistment when their retention on board ship is not essential to the government interests. No man is discharged in this manner except at his own request, in which event he must waive all claim for transportation at the government's expense to the Atlantic or the Pacific coast of the United States.

(5) Men who have enlisted outside the United States, upon the expiration of their terms of enlistment, or upon recommendation of a board of survey.

(6) Men convicted by a consular court of a felonious offence.

Q. Are enlisted men who may be detained beyond their regular terms of enlistment by reason of absence of their ship from the United States allowed extra pay for such detention?

A. Yes; enlisted men afloat detained beyond their regular terms of enlistment until the return to the United States of the vessel to which they are attached receive for the time which they are so detained an addition of one-fourth of their pay. But if an enlisted man be retained in the service after the expiration of his enlistment at his own request, he is not entitled to the one-fourth additional pay.

Q. If you are ABSENT FROM DUTY ON ACCOUNT OF SICKNESS OR DISEASE RESULTING FROM YOUR OWN INTEMPERATE USE OF DRUGS OR ALCOHOLIC LIQUORS, what PENALTY is exacted?

A. You receive no pay for the period of such absence, and your enlistment is not regarded as complete, until you shall have made made good any time in excess of one day lost on account of sickness or disease resulting from your own intemperate use of drugs or alcoholic liquors, or other misconduct.

Q. What TRANSPORTATION do you receive upon discharge from the Navy upon expiration of your enlistment?

A. (1) Men enlisted within the continental limits of the United States receive a travel allowance of four cents a mile from the place of discharge to the place where they enlisted, provided they are discharged at a place within such continental limits, not the place of enlistment.

(2) Men enlisted outside the continental limits of the United States and discharged within those limits get a travel allowance of four cents per mile from the place of discharge to the nearest port in the United States from which a regular steamship line sails for the place where they enlisted, or the nearest port to that place.

(3) Men enlisted within the continental limits of the United States and discharged outside those limits, get four cents per mile to cover the distance from the nearest steamship port of the United States to the place of enlistment.

Q. What TRANSPORTATION is furnished men discharged by medical survey?

A. If these men are residents of the United States, or of the insular possessions of the United States, they receive, at the time of their discharge, transportation to their homes, and subsistence en route.

Q. What is a SERVICE RECORD?

A. A service record accompanies each person during his term of enlistment. It is prepared at the place of enlistment

and signed by the medical officer and by the recruiting officer. It gives the full name of every person enlisted, a full description of the physical condition of every person having physical disabilities whose enlistment has been authorized by the department, and the special position for which any landsman has enlisted. The captain signs the service record quarterly, and upon the transfer, discharge, desertion, or death of the person.

Q. What entries are made on the service record?

A. (1) When occurring—The dates of issue, renewal and revocation of all appointments; ratings; disratings, and causes therefor; whenever men are detailed to duties for which they are entitled to extra compensation, the dates between which such duties are performed are noted; meritorious conduct worthy of special mention; offences committed and punishments adjudged. (2) Quarterly—Marks for professional qualifications and conduct; recommendations for honorable discharge and good-conduct medals; rating best qualified to fill, and recommendation for re-enlistment. (3) On transfer—All the quarterly information required in (2). (4) On discharge—All the quarterly information required in (2) and also the date, place, cause for, authority for, and character of discharge, rate of pay, and state of account.

Q. Why is it important to have a good record?

A. In addition to the information just given, there is a great deal contained in a service record that covers information of a special nature for the various branches. Briefly, a service record is a complete summary of a man's career in the service, from enlistment to discharge. This record is consulted when men are assigned to duty, or when giving out punishments for offences; and the man with a bad record is handicapped by the chronicle of former infractions of the regulations. The *importance of having a good record* cannot be too strongly emphasized. It should be the aim of every man in the service to *keep his record clear* of offences and punishments. A conscientious effort to maintain a clear record is a man's duty to himself as well as to the service; for such a record guarantees him the greatest possible benefits and advantages.

Q. What are CONDUCT CLASSES?

A. The crew is divided, according to conduct, irrespective of ratings, into conduct classes as follows: Special First Class, First Class, and Second Class.

Q. What are the requirements for SPECIAL FIRST CLASS?

A. To be in the first class for six consecutive months; no leave breaking or other serious offence during that time; not less than 4 in proficiency in rating for the last three months;

and recommendation by the division officer and by the executive officer. Advancement to special first class is not a right. Merely to be well behaved is not sufficient. To become special first class, a man must show that he knows and takes an interest in his duties and does them well, tries his best to be a credit to his ship and to the service, and can be depended upon to return to his duty on time. Any serious offence committed by a special first class man will always involve his reduction in class, in addition to any punishment inflicted.

Q. What are the requirements for FIRST CLASS?

A. The requisite qualifications for first class conduct men are strict attention to duty, implicit and ready obedience, sobriety, alacrity, courageous conduct, neatness of person and of dress, quiet and respectful demeanor, and general efficiency in their respective ratings.

Q. What are the ADVANTAGES of being in the SPECIAL FIRST CLASS, or the FIRST CLASS?

A. First class conduct men are allowed every indulgence compatible with the demands of duty and the exigencies of the service; and in respect to privileges a clear distinction is made between them and men in the second conduct class. *Special privileges* are allowed to men in the *special first class* when it is possible to extend them to a small number only. The granting of liberty on shore and other privileges depend on the conduct class, and the commander-in-chief establishes rules defining the privileges or restrictions for each class.

Q. What men are in the second conduct class?

A. Men who do not fulfill the requirements for special first and first class. When a person is reduced in rating, or otherwise punished for bad conduct, it shall involve his transfer to a lower conduct class at the discretion of the captain. Overstaying leave more than three hours by a petty officer, or six hours by a man of lower rating shall always involve reduction to the second class, whether the man be in the first class or special first class. Men who are in the second class because of some *other than leave breaking* offences, absence without leave, or drunkenness on duty, whose conduct meets the requirements for first class for *one month*, with no offences during that time, are advanced to first conduct class. Men who are second class because of *leave breaking*, absence without leave, or drunkenness on duty, *may* be restored to first class after *three months'* first class conduct, with no offences during that period.

Q. How do you know what conduct class you are in?

A. Every month a list of the crew is posted on the bulletin board showing the arrangement of conduct classes, and the

date upon which every person who has been reduced in class may be entitled, by good conduct, to advancement. Under no circumstances is a person advanced in rating who is on the second conduct class.

Q. What constitutes DESERTION?

A. When a man overstays his liberty 10 days, he is declared a deserter. Absence without leave, with a manifest intention not to return is regarded as desertion. Absence without leave, with a probability that the person does not intend to desert, shall at first be regarded as straggling, but at the end of 10 days, as desertion.

Q. What should a man do in case he is prevented from returning to duty at the expiration of his leave or liberty, due to some accident, or serious illness?

A. He must communicate with his captain at once, giving reason for such unauthorized absence. Failure to do this will be regarded as evidence of desertion, even though the absentee subsequently surrenders.

NOTE.—If a person deserts his ship which is about to sail, or overstays his leave until after the ship sails, with manifest intention of escaping his duty, and delivers himself on board another ship as a straggler, such offence is regarded as desertion.

Q. What provision is taken for the recapture of a deserter?

A. A notice of his desertion is sent to the nearest relative of the deserter, and a similar notice to the mayor of the town where the deserter resided at the date of his enlistment. The captain may offer a reward of $50 for the return of a deserter; and this reward is checked against the man's accounts. It is lawful for any civil officer who has authority to arrest offenders to arrest a deserter from the Navy or Marine Corps, and deliver him into the custody of the naval authorities. In all cases where such aid of civil authorities is required, descriptive lists stating the amount of the reward offered are sent to police headquarters, and, in foreign ports, to the consul of the United States.

Q. What is the law regarding the guilt of persons harboring deserters?

A. "Every person who entices or aids any person in the naval service to desert, or who harbors or conceals any such person, knowing him to be a deserter, or who refuses to give up such person on demand of any officer authorized to receive him, is liable to punishment and fine, to be enforced in any court of the United States having jurisdiction."

Q. What is the PUNISHMENT FOR DESERTION?

A. Imprisonment and dishonorable discharge. Desertion in time of war is punishable by death.

Q. Are any extenuating circumstances ever recognized in cases of desertion?

A. No. Irrespective of the motives that prompted it, desertion is always a crime, and is punished as such.

Q. What is FRAUDULENT ENLISTMENT?

A. Every man, when he enlists, is required to make a statement concerning his status; that is, whether he has ever been in the naval or the military service of the United States, and he must declare on oath that he makes a true statement to the best of his knowledge and belief, concerning his age, and he is required to sign his name in full to the shipping articles; if he makes any false statement concerning his status, he is guilty of fraudulent enlistment; and the law provides that "Fraudulent enlistment, and the receipt of any pay or allowance thereunder is an offence against naval discipline, and is punished by general court-martial." It often happens that men who desert, or who are discharged from the Navy for bad conduct, find too late that they have made a mistake in not remaining in the service, and they try to re-enlist. But such men are not wanted, and it is unlawful for them to re-enlist. They are always caught, sooner or later, by the finger-print system, court-martialed, and sent to prison.

Q. What is a SUMMARY COURT-MARTIAL?

A. "Summary courts-martial may be ordered upon petty officers and persons of inferior ratings, by the commander of any vessel, or by the commandant of any navy yard, naval station, or marine barracks to which they belong, for the trial of offences which such officer deems deserving of greater punishment than such commander or commandant is authorized to inflict, but not sufficient to require trial by a general court-martial."

Q. What absolute rights has the accused?

A. The right of counsel; the right to call witnesses in his own defence; the right to object to any member of the court for adequate reasons, and to receive a copy of the specifications prepared against him in time to work up his case.

Q. What is a DECK COURT?

A. "Deck courts for the trial of enlisted men in the Navy or Marine Corps for minor offences may be ordered by the commanding officer of a naval vessel, by the commandant of a navy yard, or station, by a commanding officer of marines, or by higher naval authority. After consideration of reports against enlisted men for offences not warranting

punishment more severe than such a court is authorized to adjudge, the officers mentioned herein shall, in their discretion, cause the offenders to be brought before a deck court."

Q. May an enlisted man object to trial by deck court?

A. Yes.

Q. In case of such objection, what is done?

A. The man is tried by summary court-martial.

Q. Which has the power to inflict the more severe punishment?

A. The summary court-martial.

Q. What is the offence in the case of the great majority of trials by summary and deck courts-martial?

A. The OFFENCE OF OVERSTAYING LIBERTY.

Q. Is this a serious offence?

A. This offence is not only serious and inexcusable, but men who are guilty of it are regarded as untrustworthy and unworthy of promotion in the Navy. No offence is more demoralizing. The liberty-breaker soon ruins himself.

Q. How does a court-martial punish this offence?

A. By sentencing the offender to LOSS OF PAY, in addition to the forfeiture of all pay that has accumulated during his unauthorized absence, and by CONFINEMENT. In the case of chronic offenders, the sentence is a BAD-CONDUCT DISCHARGE and LOSS OF ALL PAY.

Q. What is a GENERAL COURT-MARTIAL, and what is the limit of punishment that it may assign?

A. A general court-martial consists of from 5 to 13 officers. It is ordered by the President, the Secretary of the Navy, the commander-in-chief of a fleet or squadron, or the commanding officer of any naval station beyond the continental limits of the United States. The sentence is not limited by law. By regulations, there is a limit to the punishment it can inflict for each offence. For some offences, death or life imprisonment may be inflicted. A sentence of death must be concurred in by two-thirds of the members and approved by the President.

Q. Is there any military authority above a general court-martial?

A. No; it is the highest military bar. No one, not even the President, can order it to reverse a decision. An approving authority can mitigate its punishment, but can neither commute nor increase it.

Q. How can a general court-martial punish contempt of court?

A. By sentencing the offender, whether he be the accused or a witness, to two months' imprisonment.

PART ONE

"D"

PAY AND ACCOUNTS

PART ONE.

"D."

PAY AND ACCOUNTS.

The following is the pay table for enlisted men: (In addition to the base pay herein given, there are a number of various extra allowances that will be discussed later.)

* CHIEF PETTY OFFICERS.

SEAMAN BRANCH.	Monthly Pay.	ARTIFICER BRANCH.	Monthly Pay.	SPECIAL BRANCH.	Monthly Pay.
Chief Master-at-Arms	$71.50	Chief Machinists' Mates	$77.00	Chief Yeomen	$66.00
Chief Boatswains' Mates	55.00	Chief Electricians	66.00	Chief Pharmacists' Mates	66.00
Chief Gunners' Mates	55.00	Chief Printers	66.00	Bandmasters	57.20
Chief Turret Captains	66.00	Chief Carpenters' Mates	55.00	Chief Commissary Steward	77.00
Chief Quartermasters	55.00	Chief Water Tenders	55.00		
		Storekeepers (with rate of chief petty officer).	55.00		

PETTY OFFICERS, FIRST CLASS.

Masters-at-Arms, 1st class	$44.00	Boilermakers	$71.50	Yeomen, 1st class	$44.00
Boatswains' Mates, 1st class	44.00	Machinists' Mates, 1st class	60.50	Pharmacists' Mates, 1st class	44.00
Turret Captains, 1st class	55.00	Coppersmiths	60.50	First Musicians	39.60
Gunners' Mates, 1st class	44.00	Ship fitters, 1st class	60.50	Commissary Steward	66.00
Quartermasters, 1st class	44.00	Electricians, 1st class	55.00	Ship's Cooks, 1st class	60.50
		Blacksmiths	55.00	Baker, 1st class	49.50
		Plumbers and Fitters	49.50		
		Printers, 1st class	44.00		
		Sailmakers' Mates	44.00		
		Carpenters' Mates, 1st class	44.00		
		Water Tenders	44.00		
		Painters, 1st class	44.00		
		Storekeepers (with rate of petty officers, 1st class).	44.00		

* The base pay for all Chief Petty Officers holding permanent appointments is $77.00 per month.

PETTY OFFICERS, SECOND CLASS.

Masters-at-Arms, 2d class	$38.50	Machinists' Mates, 2d class	$44.00	Yeomen, 2d class	$38.50
Boatswains' Mates, 2d class	38.50	Electricians, 2d class	44.00	Pharmacists' Mates, 2d class	38.50
Gunners' Mates, 2d class	38.50	Ship fitters, 2d class	44.00	Ship's Cook, 2d class	44.00
Quartermasters, 2d class	38.50	Oilers	40.70		
		Carpenters' Mates, 2d class	38.50		
		Printers	38.50		
		Painters, 2d class	38.50		
		Storekeepers (with rate of petty officers, 2d class).	38.50		

PETTY OFFICERS, THIRD CLASS.

Masters-at-Arms, 3d class	$33.00	Electricians, 3d class	$33.00	Yeomen, 3d class	$33.00
Coxswains	33.00	Carpenters' Mates, 3d class	33.00	Pharmacists' Mates, 3d class	33.00
Gunners' Mates, 3d class	33.00	Painters, 3d class	33.00		
Quartermasters, 3d class	33.00	Storekeepers (with rate of petty officers, 3d class).	33.00		

SEAMEN, FIRST CLASS.

Seamen gunners	$28.60	Firemen, 1st class	$38.50	Musicians, 1st class	$35.20
Seamen	26.40	Shipwrights	27.50	Ship's Cooks, 3d class	33.00
				Bakers, 2d class	38.50
				Hospital Apprentices, 1st class	26.40

SEAMEN, SECOND CLASS.

Seamen, 2d class	$20.90	Firemen, 2d class	$33.00	Musicians, 2d class	$33.00
				Buglers	33.00
				Hospital Apprentices, 2d class	20.90
				Ship's Cooks, 4th class	27.50

SEAMEN, THIRD CLASS.

Apprentice Seamen	$17.60	Firemen, 3d class	$24.20	Landsmen	$17.60

MESSMEN BRANCH.

Ratings.	Monthly Pay.
Cabin stewards	$55.00
Cabin cooks	49.50
Wardroom stewards	55.00
Wardroom cooks	49.50
Steerage stewards	38.50
Steerage cooks	33.00
Warrant officers' stewards	38.50
Warrant officers' cooks	33.00
Mess attendants, 1st class	If citizens of the United States. 33.00
Mess attendants, 2d class	27.50
Mess attendants, 3d class	22.00
Mess attendants, 1st class	If not citizens of the United States. 26.40
Mess attendants, 2d class	22.00
Mess attendants, 3d class	17.60

The Secretary of the Navy is authorized to enlist in the insular force of the Navy 500 Filipinos in the following ratings and at the following rates of pay:

Ratings.	Monthly Pay.
Native coxswains	$15
Native seamen	12
Native firemen, 3d class	10
Native machinists, 1st class	28
Native machinists, 2d class	20
Native firemen, 1st class	18
Native firemen, 2d class	15
Native coal passers	11
Native stewards	15
Native cooks	13
Native mess attendants	8

Q. What are EXTRA ALLOWANCES?

A. The foregoing tables give the *base pay* for different rates in the Navy. In addition to the base pay, however, there are many allowances that greatly increase the compensation of men who serve faithfully and continuously. These allowances are given in the answers to the following questions, and all men in the Navy should take note of them.

Q. What is the allowance for petty officers who may be deprived of their quarters and rations?

A. Petty officers performing duty which deprives them of quarters and of their rations or commutation thereof receive $9 per month in addition to the pay of their rating.

Q. What is the extra pay for SEAMEN GUNNERS and GRADUATES OF SCHOOLS?

A. Men who have successfully completed a prescribed course of instruction for seamen gunners or petty officers may be given, by the Bureau of Navigation, a certificate to that effect which shall entitle them to receive $2.20 per month in addition to the pay of the rating in which they are serving; such certificates to continue in force only during the enlistments in which the men were respectively graduated, unless renewed by re-enlistment for four years, within four months from date of honorable discharge. Men holding certificates as seamen gunners are entitled to the pay prescribed for said rating and are entitled to re-enlist at any time, as such, at the base rate of $28.60 per month; but if given any other rating than that of seaman gunner, the holder of a seaman gunner's certificate shall not receive additional pay therefor, unless in continuous service.

Q. Is extra pay given for good-conduct medals?

A. Yes; 82 cents per month, in addition to the pay of the rating, for each good-conduct medal, pin, or bar.

Q. What is the extra pay for COXSWAINS detailed as COXSWAINS OF BOATS PROPELLED BY MACHINERY, or as coxswains to commanders-in-chief?

A. Five dollars per month in addition to their pay.

Q. What is the extra pay for serving on board SUBMARINE VESSELS?

A. All enlisted men receive $5 per month in addition to their pay while serving on board submarine vessels of the Navy. Besides the $5 per month allowed them for submarine service, enlisted men serving with submarine torpedo-boats, and having been reported by their commanding officers to the Navy Department as qualified for submarine torpedo-boat work, receive $1 additional pay for each day during any part of which they shall have been submerged in a submarine torpedo-boat while under way, but such further additional pay shall not exceed $15 in any calendar month. To be eligible for recommendation by their commanding officers as "Qualified for submarine torpedo-boat work," in order to receive the benefits of this paragraph, men must fulfill the requirements prescribed by the Bureau of Navigation.

Q. What is the extra pay for SEAMEN IN CHARGE OF HOLDS?

A. Seamen in charge of holds receive $5 per month in addition to their pay.

Q. What is the extra pay for SEAMEN, SECOND CLASS, detailed as JACKS-OF-THE-DUST, or as LAMPLIGHTERS?

A. Five dollars per month in addition to their pay.

Q. What is the extra pay for enlisted men detailed as CREW MESSMEN?

A. Enlisted men detailed as messmen shall, while so acting, except when assigned as reliefs during the temporary absence of the regular messmen, receive extra pay at the rate of $5 per month.

Q. What is the extra pay for SEAMEN and SEAMEN, SECOND CLASS, DETAILED FOR DUTY as FIREMEN or FIREMEN, THIRD CLASS?

A. Thirty-three cents per day in addition to the pay of their ratings for the time so employed.

Q. What is the extra pay for enlisted men regularly detailed as SIGNALMEN?

A. In addition to the pay of their ratings, Signalmen, first class, receive $3 per month; Signalmen, second class, $2; Signalmen, third class, $1.

Q. What is the extra compensation for GUN CAPTAINS and GUN POINTERS?

A. Enlisted men of the Navy, after having qualified as gun pointers, and who are regularly detailed, by the commanding officer of the vessel, as gun pointers, receive monthly, in addition to the pay of their respective ratings, extra pay as follows:

Heavy Gun Pointers (for guns of 8-inch caliber, or larger):

First class	$10
Second class	6

Intermediate Gun Pointers (guns from 4-inch to 7-inch inclusive):

First class	$8
Second class	4

Secondary Gun Pointers (guns from 1-pounder to 3-inch inclusive):

First class	$4
Second class	2

Extra pay is allowed a gun pointer during such time only as he remains qualified, and only while he is regularly detailed as a gun pointer at a gun of the class at which he qualified.

Enlisted men of the Navy regularly detailed by the commanding officer of a vessel as gun captains, except at secondary battery guns, receive, in addition to the pay of their respective ratings, $5 per month, which, in the case of men holding certificates as gun captains, or of graduation from the gun-captain

class, petty officers' school, includes the $2 per month to which such certificates entitle them.

Q. What is the extra pay for enlisted men detailed as SHIP'S TAILORS?

A. Any enlisted man of the Navy detailed to perform the duties of ship's tailor on board of a vessel having a complement of 600 men or more, exclusive of marines, receives $20 per month in addition to the pay of his rating; on a vessel having a complement of from 300 to 600 men, exclusive of marines, $15 per month in addition to the pay of his rating; on a vessel having a complement of less than 300 men and not less than 100 men, exclusive of marines, $10 per month in addition to the pay of his rating. Any enlisted man of the Navy detailed as "tailor's helper" on board of a vessel having a complement of 600 men or more, exclusive of marines, receives $10 per month in addition to the pay of his rating; provided, that the total pay of an enlisted man detailed to perform the duties of ship's tailor shall not exceed $50 per month, and of tailor's helper shall not exceed $40 per month. It is the duty of men so detailed to alter, when necessary, without expense to the enlisted men of the Navy, all uniforms, caps, and clothing issued by the pay officer.

Q. What is the HONORABLE DISCHARGE GRATUITY?

A. A man who re-enlists within four months after being honorably discharged is given a continuous-service certificate and is allowed *full pay during his four months' leave.* And every time he re-enlists under a continuous-service certificate his pay is increased $1.50 per month. Men who hold continuous-service certificates are given the preference when it comes to promotion. After 25 years' service they may get shore duty at naval stations and receiving ships.

Q. What is the extra pay for RE-ENLISTMENT?

A. To provide adequate compensation for trained men, the pay now prescribed for each rating in the Navy is increased $5.50 per month during the second period of service, and a further sum of $3.30 per month during each and every subsequent period of service; but only enlisted men who are citizens of the United States, and whose second and subsequent periods of service each follow next after service in the Navy that was terminated by reason of expiration of enlistment, receive the benefits of such increased pay. In the cases of men who are or were finally discharged from the Navy by reason of expiration of enlistment, the first enlistment on or after November 27, 1906, is considered the second period of service which shall carry with it the increased pay provided by this para-

graph, except that men discharged on recommendations of boards of medical survey shall, if they re-enter the service, be given credit for any previous periods of service in the Navy which were terminated by reason of expiration of enlistment.

Q. What is the extra pay for CHIEF PETTY OFFICERS detailed as INSTRUCTORS of apprentice seamen at naval stations?

A. Chief petty officers so detailed who qualify as instructors by examination receive in addition to their pay the sum of $10 per month while so detailed.

Q. What is the extra pay for APPRENTICE SEAMEN detailed as APPRENTICE CHIEF PETTY OFFICERS and APPRENTICE PETTY OFFICERS?

A. Apprentice seamen detailed as apprentice chief petty officers, apprentice petty officers, first, second or third class, in connection with the instruction of apprentice seamen at naval stations receive, in addition to their pay, the sums of $2.50, $2, $1.50, and $1 per month, respectively, while so detailed.

Q. What is the CLOTHING BOUNTY?

A. An outfit of clothing not exceeding in value the sum of $60 is given, on first enlistment, to all enlisted men of the Navy.

Q. Are enlisted men allowed a RATION?

A. All enlisted men in the Navy attached to any United States vessel or station, and doing duty thereon are allowed a ration or commutation thereof.

Q. What extra pay is allowed MAIL CLERKS?

A. Enlisted men detailed as mail clerks receive in addition to the pay of their rating, monthly, on ships having a complement of 650 or more and on receiving ships, $25; on ships having from 250 to 650, $20; on ships having from 125 to 250, $15; on ships having from 35 to 125, $5. Assistant Navy Mail Clerks receive $15 per month in addition to the pay of their rating on ships having a complement of 650 or over.

Q. What extra pay is granted to DIVERS?

A. Enlisted men of the Navy, not under instruction or diving for practice, shall, when employed in submarine diving, receive extra compensation therefor at the rate of $1.20 per hour for the actual time so employed under water.

EXAMPLE OF CHIEF PETTY OFFICERS' PAY.

The pay and allowances of a chief petty officer on each reenlistment, and upon retirement after 30 years of service, are as follows:

	Monthly pay
1st Re-enlistment	$78.50
2d Re-enlistment, holding permanent appointment and $2.20 additional for Instruction Certificate	89.62
3d Re-enlistment	97.44
4th Re-enlistment	103.06
5th Re-enlistment	108.68
6th Re-enlistment	114.30
7th Re-enlistment	119.92

The above includes only permanent pay and allowances. Rations and instructor's allowance are additional.

(1) Men must remember that their pay, except what is necessary to clothe them, is nearly all clear money. They have many allowances in addition to their pay. Their ration is quite sufficient to feed them. They have no board bill to pay. If they are sick, they get medical attendance free. In case of serious illness, they are sent to a hospital, and cared for by the government. If they are injured in line of duty, they get a pension. They would get no such allowance in civil life.

(2) It has been seen that there are certain rewards in the way of pay and allowances for men who graduate from the various classes in the petty officers' school of instruction. Proficiency in ordnance, torpedoes, engineering, or electricity will insure promotion, while men who have a special taste for clerical work are sent to the Yeoman's School. *And for the man who strives to be a good seaman, there is always promotion.* In fact, there are so many trades in the Navy that it is attempted to assign every man to the work for which he is best fitted.

(3) Every enlisted man must constantly bear in mind the fact that by overstaying his liberty and thus blackening his record, he not only runs the risk of ruining all chance for advancement, but also, by his own actions, deprives himself of the pay that he has worked hard to earn.

Q. What is an ALLOTMENT?

A. Enlisted men, with the approval of the captain, are permitted to make an allotment of a part of their pay to their relatives. The paymaster makes out the allotment, and it is paid monthly from the Navy Allotment Office, Washington, D. C. Men should not allot so much of their pay that they will not have enough left to pay their own expenses.

Q. Where may men DEPOSIT their MONEY or VALUABLES?

A. (1) The paymaster of a ship will receive deposits of

money or valuables at the risk of the owners and keep them in a safe. Every precaution will be taken for the safe-keeping of such deposits.

(2) Men may deposit money with the paymaster in sums not less than $5 and receive interest thereon from the government at the rate of 4 per cent per annum. Each depositor is furnished with a deposit book, which for safety is kept by the commanding officer until the man leaves the ship. These books are then transferred with the man to the ship to which he is transferred, but the book belongs to him at all times. This is an excellent way for a man to save money. Deposits may not be withdrawn until a man is discharged.

(3) Each man is advised to keep his own record of his account with the paymaster. Each man knows what salary he draws per month, and what extra allowances he receives. Keep a strict account of all you receive from the paymaster during the quarter, and the difference between this and your pay for the quarter is what is due you.

Q. How do you know how much is charged against you by the paymaster?

A. Keep the duplicate receipts that are given you when you draw clothing and small stores. Compare the cost of each article with the list of prices posted on the bulletin board and verify the total of each receipt. The sum of all the receipts for the quarter should be the charge for clothing and small stores against your account. If a mistake has been made, point it out, and, if you cannot get it rectified, go to your divisional officer. Besides this, 20 cents monthly is charged against the account of every person in the Navy, officer or enlisted man, to be applied to the fund for naval hospitals; the following may also be charged against you: any allotment, check, monthly money drawn, or if you have purchased anything during the month at auction. Add all such charges against you, and you will have the sum that the paymaster should charge against your account. Mistakes in accounts are rarely made, so be careful about saying that they are wrong; but if a mistake really has occurred, point it out and it will be rectified at once.

Q. What is MONTHLY MONEY?

A. The Navy Regulations say:

"3669. (1) Each member of the crew, except such as may be in confinement as punishment, serving sentence, or awaiting trial, shall be allowed to draw monthly such money as he may have due him on the pay rolls.

"(2) Each apprentice seaman shall be required to keep to his credit one month's pay of his rating.

"(3) Monthly money shall be paid twice a month, on (approximately) the 5th and 20th of the month, unless that day falls on Sunday or a legal holiday, in which case it should be paid on the preceding or following week day. If it is impracticable, when at sea to pay on that date, it should be paid as soon after as conditions warrant; but nothing herein contained shall be construed as preventing the captain from granting, for reasons satisfactory to himself, special requisitions for money at other times."

Q. When is a man justified in asking for a special money requisition?

A. Only when he is satisfied that he has an absolutely legitimate reason for making such a request. Don't annoy the executive officer with frivolous requests for special money requisitions.

PART ONE

"E"

RULES REGARDING SALUTES; NAVAL CUSTOMS

PART ONE.

"E."

RULES REGARDING SALUTES; NAVAL CUSTOMS.

1. Nothing gives a better indication of the state of discipline than the observance of the forms of military courtesy.

2. From time immemorial the salute has been a form of military courtesy that has been strictly and conscientiously observed by men of every nationality who followed the profession of arms.

3. In falling in with ships of foreign nations, or in entering foreign ports, the NATIONAL SALUTE of 21 GUNS is fired, and, in turn, answered by the foreign ships or batteries.

4. In regard to personal salutes, a junior always salutes a senior An enlisted man salutes an officer, and the very officer saluted is called to account if he fails to salute another officer, his senior.

5. Enlisted men are often lax in the matter of saluting. This laxity is usually due to ignorance of how properly to salute, or to uncertainty as to when the salute is required.

6. If uncertainty exists in regard to the necessity for saluting, the only rule to follow is to render the salute. It is far better to salute, even if in doubt as to the necessity for so doing, than to expose yourself to the chance of censure and reprimand, and to be thought ignorant of the rules of one of the most essential and elementary requirements of your profession.

7. Unfortunately there are some men who deliberately fail to salute an officer, and then, when called to account, rely upon giving some babyish excuse about their having failed to see him, or something equally foolish and untrue. By observing the petty officers and seamen, recruits will learn that the higher a man's rating the better he realizes the necessity for saluting, and the more pride he takes in rendering the salute properly.

8. How properly to render the salute, and the few simple rules regarding salutes should be amongst the first things learned by a recruit.

Q. What is the POSITION OF ATTENTION?

A. (1) Heels on the same line, and as near each other as the conformation of the man permits.

(2) Feet turned out equally and forming with each other an angle of about 60 degrees.

(3) Knees straight without stiffness.

(4) Body erect on the hips, inclined a little forward; shoulders square and falling equally.

(5) Arms and hands hanging naturally, backs of the hands outward; thumbs along the seams of the trousers; elbows near the body.

(6) Head erect and square to the front, chin slightly drawn in without constraint, eyes straight to the front.

Q. How render the HAND SALUTE?

A. (1) Raise the right hand smartly until the tip of forefinger touches the lower part of the head-dress above the right

Plate I.
Hand Salute.

Plate II.
Rifle Salute at Shoulder.

Plate III.
Rifle Salute.

eye, thumb and fingers extended and joined, palm to the *left*, forearm inclined at about 45 degrees, hand and wrist straight.

(2) The salute being returned, or the officer passed and the salute unobserved, drop the hand quickly by the side.

(3) The left hand is used only when the right hand is engaged.

(4) When saluting, turn the head and eyes toward the person saluted.

(5) The salute should be rendered at six paces before passing, or being passed by, an officer, unless the nearest point reached be greater than six paces, and not more than 30 paces, in which case salute at the point nearest the officer.

Q. What are the regulations in regard to SALUTING THE CAPTAIN and the ADMIRAL on board ship?

A. All officers and enlisted men salute the captain and all officers senior to him on every occasion of meeting, passing near, or being addressed by them.

Q. What about SALUTING OTHER OFFICERS ATTACHED TO THE SHIP?

A. On board ship enlisted men salute all officers junior to the captain on their first daily meeting or passing near, and whenever addressed by them or addressing them. At other times they clear the gangway and stand at attention facing the officer until he has passed.

Q. What about saluting ALL OFFICERS WHO ARE MAKING INSPECTIONS?

A. All men salute the executive officer, or other officer, when he is making an inspection.

Q. Under what circumstances do MEN WHO ARE ACTUALLY AT WORK salute?

A. Only when addressed by an officer or called to attention.

Q. Do MEN WHO ARE IN MILITARY OR DIVISION FORMATION salute, even when they are directly addressed?

A. No; but if at "rest," they come to attention.

Q. Are MEN WHO ARE SEATED AT WORK, at games, or at mess required to rise when an officer other than the captain or the admiral passes?

A. No; *except when they are called to attention,* or when it is necessary for them to rise in order to clear a gangway.

Q. If you are a passenger in a boat, and an officer enters the boat, do you salute him?

A. Yes; rise and salute, unless awnings are spread, in which case salute without rising

Q. What about SALUTING WHEN IN A BOAT AT THE BOOM?

A. In a boat where there is no officer, when at a landing or at the boom, men seated, and not at the oars, rise and salute whenever a boat with an officer in it comes near. If awnings are spread, they salute without rising.

Q. What are the regulations in regard to precedence in embarking in or leaving boats?

A. Juniors always get into a boat ahead of, and leave it after, their seniors, unless the senior officer in the boat gives orders to the contrary. As a general rule, the seniors take the seats furthest aft; juniors will leave such seats for their seniors.

Q. What are the instructions regarding PERSONAL SALUTES ASHORE?

A. (1) All salutes in passing or approaching are begun first by the junior at six paces distance, or at six paces from the nearest point of passing; no salutes, except as otherwise prescribed, are made at a greater distance than 30 paces.

(2) Officers in civilian dress are saluted in the same manner as when in uniform.

(3) Officers will at all times acknowledge the salutes of enlisted men.

(4) When an officer enters a room where there are enlisted men, "attention" is called by someone who perceives him; then all rise, remain standing at attention, uncovered, and preserve silence until the officer leaves the room; if at meals, they will not rise.

(5) An enlisted man, being seated and without particular occupation, rises on the approach of an officer, faces toward him and salutes; if standing, he faces toward the officer for the same purpose. If the parties remain in the same place or on the same ground, such compliments need not be repeated.

(6) If actually at work, men do not cease their occupation to salute an officer, unless addressed by him.

Q. What about saluting officers not attached to your own ship?

A. Men at all times, and in all situations, pay the same compliments to officers of the Army, Navy, and Marine Corps, to officers of the Volunteers and Militia in the service of the United States, and to officers of foreign service, as they do to the officers of the ship or command to which they belong.

Q. What does every man do when "ATTENTION" is sounded ON THE BUGLE?

A. The bugle call "Attention" is a signal for *every man* on board ship to stand at attention and face the person for whom "Attention" is sounded, if he can be seen; otherwise, stand at attention facing outboard. However, men inside the ship on covered decks, *if not in sight through gun ports or other openings,* are not required to obey the bugle call, but they must keep silence until "Carry on" is sounded.

Q. Do men who are actually engaged in work obey the bugle call "Attention"?

A. Yes; if they are in sight from outside the ship.

Q. Under what circumstances do men working over the ship's side come to attention?

A. Only when the bugle sounds "Attention."

Q. What is meant by the command "GANGWAY"?

A. It should be given by anyone who observes an officer approaching a gangway that blocks his passage. Attention is

paid to extending this courtesy to civilians as well as to officers. There must be no doubt but that the gangway has been properly cleared; the senior officer or petty officer in the immediate vicinity is responsible that this is done promptly. The requirements of the command "Attention" are also carried out, if applicable. When officers are escorting visitors through their own ships, the requirements of the commands "Attention" and "Gangway" must be strictly complied with, whether the visitors are officers from other ships or civilians. If the party is not to pass on promptly, the order "Carry on" is given by the officers of the ship without unnecessary delay.

Q. What HONORS TO THE NATIONAL AIR are rendered?

A. When "The Star Spangled Banner" is played on board a vessel of the Navy, at a naval station, or anywhere that persons belonging to the naval service are present in their official capacity, or present unofficially but in uniform, all officers and enlisted men present shall stand at attention, facing towards the colors, or if no colors, the music, retaining that position until the last note of the air, then, if covered, salute. The same respect must be observed toward the national air of any other country when it is played as a compliment to official representatives of that country.

Q. What HONORS TO THE NATIONAL ENSIGN are rendered?

A. (1) The following ceremonies are observed at "Colors" on board ships in commission: The field music, guard of the day, and the band, if there be one, are present. At morning "Colors," the band shall play "The Star Spangled Banner," and, at the first note of the national air, the ensign shall be started up and hoisted smartly to the peak or truck. All officers and men face the ensign and stand at "Attention," and the guard of the day and the sentries under arms shall come to the position of "Present," while the national air is being played. At the end of the national air, all officers and men shall salute, ending the ceremony. If there is no band available, the field music shall sound the "Colors" call in place of the national air. The same ceremonies are observed at sunset "Colors," the ensign being started from the truck or peak at the beginning of the national air.

(2) The same ceremonies are observed at naval stations.

(3) When the ensign is hoisted at sunrise, the usual honors and ceremonies are paid, and they are not repeated at 8.00 a. m.

(4) The same honors are rendered at "Colors" to foreign ensigns, when circumstances warrant, except that where such honors are rendered simultaneously to our own and to foreign ensigns, the precedence is given to our own.

Q. In addition to the salutes at morning and evening "Colors," what are the regulations in regard to saluting the national ensign?

A. "All officers and men, whenever reaching the quarter-deck, either from a boat, from a gangway, from the shore, or from another part of the ship, shall salute the national ensign. In making this salute, *which is entirely distinct from the salute to the officer of the deck,* the person making it shall stop at the top of the gangway or upon arriving at the quarter-deck, face the colors, and render the salute, after which the officer of the deck shall be saluted. In leaving the quarter-deck, the same salutes shall be rendered in inverse order. The officer of the deck shall return both salutes in each case, and shall require that they be properly made."

Q. What is the QUARTER-DECK?

A. "The commanding officer shall clearly define the limits of the quarter-deck; it shall embrace as much of the main, or other appropriate deck, as may be necessary for the proper conduct of official and ceremonial functions. When the quarter-deck so designated is forward, and at a considerable distance from the colors, the salute to the colors prescribed in the preceding paragraph will not be rendered by officers and men except when leaving or coming on board the ship."

Q. What is the regulation in regard to the USE OF a ship's GANGWAYS when coming on board?

A. The starboard gangway shall be used by all commissioned officers and their visitors; the port gangway shall be used by all other persons. If the construction of the ship, or other circumstances, make a change in this rule expedient, the change may be made at the discretion of the commanding officer.

Q. Is there any exception to this rule?

A. Yes; in heavy weather the lee gangway shall be used.

Q. What is meant by the "lee gangway"?

A. The lee side of a vessel is the side opposite to that against which the wind blows; the latter is called the weather side.

Q. What permission must you obtain before leaving the ship at any time?

A. Permission from the officer of the deck to leave the ship. When your name is checked off on the liberty list, such permission is considered to have been granted.

Q. What report do you make to the officer of the deck when returning on board the ship to which you are attached?

A. "I report my return on board, sir."

Q. In going on board a ship other than the one to wnich you are attached, what report do you make to the officer of the deck?

A. After saluting the colors and then the officer of the deck, report, "I request your permission to come on board, sir."

Q. What report on leaving the ship?

A. "I request your permission to leave the ship, sir."

Q. Do you always salute when addressing the officer of the deck?

A. Yes; always salute when addressing, or being addressed by, the officer of the deck, or any other officer.

Q. Who is the COMMANDER-IN-CHIEF OF THE ARMY AND THE NAVY?

A. The President of the United States.

Q. What authority is vested in the SECRETARY OF THE NAVY?

A. By an act of Congress, approved April 30, 1798, there was established "An executive department to be denominated the Department of the Navy," and the chief officer of that department was therein directed to be called the "Secretary of the Navy." Appointment of the Secretary is made by the President, by and with the advice and consent of the Senate, and he is a member of the President's cabinet. The Secretary executes such orders as he may receive from the President relative to the procurements of naval stores and materials, and the construction, armament, equipment, and employment of vessels of war, as well as all other matters connected with the naval establishment. He is aided in carrying out these duties by an ASSISTANT SECRETARY OF THE NAVY, who, in his own department, is subordinate only to the President and to the Secretary of the Navy.

Q. What authority is vested in the COMMANDER-IN-CHIEF of a fleet or squadron?

A. The President of the United States is the Commander-in-Chief of the Army and the Navy, but the title of commander-in-chief is given to an officer in command of an independent fleet or squadron, when appointed as such by the Navy Department. He possesses all authority, honors, and responsibilities from the date on which his flag is hoisted until it is finally hauled down.

Q. Who are FLAG OFFICERS?

A. All officers of the line of the Navy above the rank of captain. Flag officers not in chief command are usually assigned by the department to the command of a division of the fleet. A division of the battleship fleet is usually, but not necessarily, composed of five battleships. Many enlisted men speak of the Flag Lieutenant and the Flag Secretary as "Flag Officers." This is, of course, incorrect. These officers are members of a Flag Officer's Staff.

Q. Who is the CAPTAIN?

A. The officer in actual command of a government vessel. He is a line officer, and in case of his absence or death, he is succeeded by the line officer next in rank. His authority over his own ship and crew is supreme; and he is authorized by law to inflict certain punishments in every case of breach of discipline.

Q. Who is the EXECUTIVE OFFICER?

A. He is the line officer next in rank to the captain. He has entire charge, under the direction of the captain, of all matters relating to the personnel, routine, and discipline of the ship. All orders issued by him are considered as coming direct from the captain, and will be obeyed exactly as if the captain had issued them. No one has any right to ask whether a particular order came from the captain. The executive will be obeyed, and if his orders are not approved, he alone is responsible. In case of the absence or disability of the captain, the executive officer assumes command.

Q. Who is the FIRST LIEUTENANT?

A. He is the officer charged with the responsibility for the cleanliness, good order, efficiency, and neat and trim appearance of the ship as a whole, and of all parts thereof except the engines and other machinery connected with the propulsion of the ship.

Q. Who is the NAVIGATOR?

A. He is the officer detailed by the department to perform the navigation duties, and is the head of the navigation department of the ship.

Q. Who is the GUNNERY OFFICER?

A. He is the officer detailed by the department to have supervision over and be responsible for the entire ordnance equipment; he is the head of the ordnance department of the ship.

Q. Who is the ENGINEER OFFICER OF THE SHIP?

A. He is the officer detailed by the department to be responsible for the preservation and efficient working of all machinery under the cognizance of the Bureau of Steam Engineering. He is the head of the engineering department of the ship, and has command of the engineer's division.

Q. Are the heads of the ship's departments, as above specified, senior to the watch and division officers?

A. Yes.

Q. Over what has the DIVISION OFFICER control?

A. He is responsible for the control and fighting efficiency of his division, for the care and preservation of all ordnance material, boats, stores, supplies, and articles of outfit issued to his

division. Officers commanding divisions personally instruct and exercise their divisions at all prescribed drills.

Q. Who is the OFFICER OF THE DECK, and what authority has he?

A. The division officers, in rotation, come on watch as officer of the deck. He is the line officer on watch in charge of the ship. He represents the captain and *has authority in the performance of his duty over every person on board ship, officers and men, except the captain and the executive officer;* he must be respected and obeyed accordingly.

Q. Where may he ordinarily be found, and how distinguished?

A. At sea he is usually on the bridge. In port, when his duty does not call him elsewhere, he is on the quarter-deck. If not standing watch, but day's duty, he is allowed to go below when not engaged; but the usual routine continues, and he receives exactly the same routine reports wherever he may be. In port he carries a spy glass or binoculars and wears gloves; at sea he carries binoculars.

Q. What responsibility has the officer of the deck?

A. The officer of the deck is responsible for the safety of the ship, subject to special orders that he may receive from the captain or the executive officer.

Q. When you wish to see the executive officer, do you have to request permission from the officer of the deck and inform him in regard to what subject you desire to see the executive officer?

A. Yes; at any time except when the executive officer is holding mast for requests.

Q. What is meant by MAST FOR REQUESTS?

A. The executive officers sets aside a certain portion of his time every day in order to listen to requests on the part of members of the crew. In order to be granted, it is needless to say that these requests must be legitimate ones. In regard to making requests, men must bear in mind two rules: First, be sure that your request is a reasonable one; second, unless it is absolutely impracticable by reason of your being on watch, or through absence from the ship on duty, *make your request at the time set aside for request mast.* The executive officer is a very busy man; he sets aside a certain portion of his time especially for the purpose of listening to your request—if it be a legitimate one—consequently, he is not apt to give a favorable reply to a request made at another time, unless a man happens to have been on duty when mast was held.

Q. Is mast held for any other purpose than for listening to requests on the part of the crew?

A. Yes; the captain holds mast to investigate reports and assign punishments.

Q. Can you see the captain in regard to any matter without first having obtained permission from the executive officer?

A. No.

Q. In case you are prevented from being present at mast for requests, and at some other time request permission from the officer of the deck to see the executive officer, would the officer of the deck be justified in refusing you such permission?

A. Yes; if he considers the request trivial, or unnecessary, or improper; or if he has general or special orders concerning the subject, he would be entirely justified in refusing to grant your request; he would possibly, but not necessarily inform you why he refused.

Q. Who are JUNIOR OFFICERS OF THE LINE?

A. Officers below the rank of lieutenant, junior grade, not assigned permanently to duty as watch and division officers.

Q. What officers are called STAFF OFFICERS?

A. Medical officers, pay officers, chaplains, professors of mathematics, and civil engineers. They rank with line officers of the corresponding grade.

Q. What are the ARTICLES FOR THE GOVERNMENT OF THE NAVY?

A. They are articles approved by act of Congress, thus made into the law of the land, for the government of the Navy. The general features of the Navy Regulations are founded on these articles. They are always posted on the ship's bulletin board; once a month they are read at muster by the executive officer. Every person in the Navy should read these articles carefully, and make himself familiar with their general nature.

Q. What are the U. S. NAVY REGULATIONS AND NAVAL INSTRUCTIONS?

A. Regulations and instructions adopted for the government of all persons in the Navy. Your division officer has a copy of these regulations and instructions; he will be glad to answer questions in regard thereto provided such questions are not trivial or unnecessary.

Q. When you receive an order from an officer, what is the proper reply to make?

A. The reply, "AYE, AYE, SIR."

Q. What is the MEANING OF "AYE, AYE, SIR"?

A. "The order is understood, and will be obeyed."

Q. What expressions should be avoided in replying to an order received from a senior?

A. The expressions "Very good, sir," or "Very well, sir." These expressions, although too often used by enlisted men in

response to an order from an officer, do not convey the meaning given by the expression "Aye, aye, sir," which is the answer that a subordinate has always given in response to an order from a senior.

Q. What are the regulations in regard to the REDRESS OF WRONGS?

A. "If any person in the Navy considers himself oppressed by his superior, or observes in him any misconduct, he shall not fail in his respectful bearing toward him, but shall represent such oppression or misconduct to the proper authority. He will be held accountable if his representations are found to be vexatious, frivolous, or false. Any application for redress of wrong shall be made in writing through the immediate commanding officer to the commander-in-chief of the fleet or squadron, or to the senior officer present, and it shall be the duty of the latter to take such action in the matter as, in his judgment, justice and the good of the service demand."

Q. What are the regulations regarding EXERCISE OF AUTHORITY?

A. "(1) All persons in the Navy are required to obey readily and strictly, and to execute promptly the lawful orders of their superiors.

"(2) Superiors of every grade are forbidden to injure those under their command by tyrannical or capricious conduct, or by abusive language. Authority over subordinates is to be exercised with firmness, but with justice and kindness."

(3) These articles are, of course, applicable to petty officers as well as to officers.

Q. What are the regulations regarding QUARRELS AND DISTURBANCES?

A. "In the event of a riot or quarrel between persons belonging to the Navy, it shall be the duty of the senior line officer present to suppress the disturbance and, if necessary, to arrest those engaged in it even though they may be his superiors in rank; and all persons belonging to the Navy who may be present shall render prompt assistance and obedience to the officer thus engaged in the restoration of order. Should there be no line officer present, the senior officer of the Navy or of the Marine Corps who may be present shall exercise the same authority and be entitled to the same obedience."

PART ONE

"F"

GENERAL CHARACTERISTICS OF THE SHIPS

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Q. How is the ship divided lengthways?

A. Into forward, 'midships and after parts.

Q. Which is the bow?

A. The forward end of the ship.

Q. Which is the stern?

A. The after end of the ship.

Q. What is the part known as 'midships?

A. The middle part.

Q. What are the starboard and port sides?

A. The starboard side is the right-hand side looking forward; the port side is the left-hand side looking forward.

Q. What is the keel?

A. The first piece of metal or timber laid on the blocks when building the ship.

Q. What is the stem?

A. It is the piece of timber or metal—the vertical extension of the keel—in the forward part of the vessel to which the plating is secured forward.

Q. What is the sternpost?

A. It is the piece of timber or metal—the vertical extension of the keel—in the after part of the ship to which the plating is secured aft. If a single screw is used, the post to which the rudder is secured is the "rudder post," and the other the sternpost.

Q. What are the frames?

A. The athwartship frames or ribs rising from the keel to form the main body of the ship. The plating is secured to the frames.

Q. What is the bilge?

A. The flat part of the ship's body on each side of the keel. It extends out to the "turn of the bilge."

Q. What are the bilge keels?

A. Large pieces of metal secured near the turn of the bilge. They lessen a ship's motion while rolling.

Q. What is the "counter"?

A. The portion of the stern from the waterline to the overhang (or the part which projects out over the water).

Q. What is the waterline?

A. It is the line the water makes along a ship's side when she is afloat. Ship's bottoms are usually painted red up to the load waterline—that is the waterline at heaviest load.

Q. What is displacement?

A. It is the actual weight, in tons, of water displaced by the ship.

Q. What is the "run" of a ship?

A. The narrowing of a hull aft, between keel and counter.

Q. What is the cutwater?

A. It is the forward edge of the stem; the part that cuts the water when a ship is in motion.

Q. What is a double bottom?

A. Iron or steel ships generally have two complete bottoms, the inner and the outer. The space between them is called the "double bottom."

Q. What is a watertight compartment?

A. All steel ships are divided into a large number of rooms and passages that are so fitted as to be watertight. Each separate compartment is known as a watertight compartment. The compartments serve to keep the ship afloat by confining the water if her hull is pierced.

Q. What are the eyes of a ship?

A. The extreme forward portions of the ship, where the plating joins the stem.

Q. What are the wings?

A. The portion of the hold nearest the side of the ship.

Q. What are the chain lockers?

A. Compartments in the forward portion of the vessel under the chain pipes for carrying and storing cables.

Q. What are the beams of a ship?

A. Horizontal bars of metal running across the ship to support the decks and connect the sides.

Q. What are waterways?

A. Small gutters extending all around the edge of the upper deck. When the deck is washed down, the waterways carry off the water over the side through the scuppers.

Q. What are the scuppers?

A. They are holes in the waterways through which water is conveyed overboard through pipes.

Q. What are partners?

A. Frames of timber fitted into the decks immediately around the masts to strengthen the decks.

Q. What are the ports?

A. Openings in the ship's side for various purposes. Air ports are for the admission of air. Gun ports are openings through which the guns are pointed and fired. Merchant ships have cargo ports.

Q. What are the port sills?

A. Formerly the timbers forming the upper or the lower part of the port; now they are simply the upper or the lower sides of the ports.

Q. What are stanchions?

A. Vertical pillars of wood or metal supporting a beam or some other portion of the ship.

Q. What is caulking?

A. Driving oakum between the planks of a deck; it is then filled in, or "payed" with pitch.

Q. What is the rudder?

A. The apparatus used to steer a vessel; it hangs on the sternpost—or rudder post—by pintles and gudgeons.

Q. What is the tiller?

A. A piece of timber or metal fitted fore and aft into the head of the rudder by which to turn it when steering.

Q. What is the wheel?

A. A framework shaped like a wheel used to move the tiller and rudder. With the steam steering gear in general use, the wheel, when turned, opens the valve of the steering engine and the engine moves the tiller. The wheel is connected to the valve by gearings, or by a flexible wire cable.

NOTE.—In all vessels of the Navy the wheel, the rudder and the ship's head move in the same direction.

Q. What is the forecastle, the gangway (or waist), the quarter-deck?

A. In modern days these portions of the ship are not so clearly defined as they were in the old sailing ships. Generally speaking, the forecastle extends from the foremast forward on the upper-deck (main-deck). The quarter-deck extends from

the mainmast to the poop, or to the stern if there is no poop. The portions of the upper-deck on each side between the forecastle and the quarter-deck are known as the waist or the gangways.

NOTE.—Battleships of recent construction have the officers' quarters forward. This and other considerations require that the quarter-deck, in so far that it is there that all official and ceremonial functions are conducted, be defined by the captain. Consequently the Navy Regulations say: "The commanding officer shall clearly define the limits of the quarter-deck; it shall embrace so much of the main or other appropriate deck as may be necessary for the proper conduct of official and ceremonial functions."

Q. What is the topgallant forecastle; what is the poop?

A. The topgallant forecastle is a small deck on the bows of a vessel above the spar or main-deck; a poop-deck is a similar deck aft. The topgallant forecastle usually extends aft to the foremast. The poop-deck usually extends forward only to the mizzenmast. The topgallant forecastle and the poop-decks are usually found only on sailing vessels.

Q. What is the break of the poop or forecastle?

A. The after end of the forecastle, or the forward end of the poop-deck.

Q. What is a hatchway?

A. An opening in the decks forming a passageway from one deck to another, and into the holds.

Q. What is a coaming?

A. The raised boundary of the hatchways, to keep the water from going below.

Q. What are gratings?

A. Coverings of lattice-work for the hatchways, waterways, bridges, etc.

Q. What are deadlights?

A. Pieces of heavy glass fixed in the deck, or ship's side, to admit light.

Q. What are scuttles?

A. Round or square holes cut in the deck for the passage of coal, ammunition, etc.

Q. What are the bulwarks?

A. The planking or plating around the vessel above the upper-deck.

Q. What is the taffrail?

A. The rail around a vessel's stern.

Q. What is a bumpkin?

A. A short beam, or metal bar, projecting out from the bow or quarter of a ship; it is used to give better lead to certain gear.

Q. What are hawse holes?

A. Holes in the bow of a ship for cables to pass through.

Q. What are hawse plugs?

A. Plugs fitted in the hawse holes to prevent the water from coming on board through them. When made of canvas, stuffed or filled with oakum, they are called jackasses.

Q. What are bucklers?

A. Shutters fitted over an opening to confine the packing that is put in holes to keep water out. They keep hawse plugs, for example, from washing inboard.

Q. What is the manger?

A. It is the part of the deck that is partitioned off forward to prevent any water that may enter through the hawse holes from running aft over the decks.

Q. What are the chain pipes?

A. The holes for the cable where it passes from one deck to another from the chain lockers.

Q. What are the chain bitts?

A. The heavy vertical pieces of iron fitted in the fore part of the deck to which, with the assistance of deck stoppers and compressors, the cable is secured. One or two turns are taken around the bitts.

Q. What is a compressor?

A. The large movable iron lever fixed at the bottom of the chain pipe. A tackle is secured to its end and by hauling on the tackle the cable is controlled as it runs out, by being nipped between the compressor and the lower part of the chain pipe.

Q. What is a capstan?

A. A barrel of wood or iron turning around horizontally or vertically on a central spindle. By forcing it to turn, either by pushing on capstan bars or by steam, it serves to hoist heavy weights or to weigh anchor.

Q. What are bitts?

A. They are vertical pieces of timber or metal very securely fastened to the deck of the vessel. They are used to secure

hawsers, or for any purpose where heavy strains must be taken.

Q. What are the fife and the pin rails?

A. They are rails at which gear is belayed. Fife rails are around masts. Pin rails are straight; they are placed along the rail, inside bulwarks.

Q. What is an eyebolt?

A. A bolt with an eye—or opening—in the head to which a tackle may be hooked. An eyebolt having a ring welded in the eye is a ring bolt.

Q. What is a fish boom, or fish davit?

A. A movable boom, or davit, for fishing the anchor.

Q. What is the billboard?

A. A shelf or ledge on the ship's side to support the fluke of the anchor.

Q. What are the channels, or chains?

A. Platforms projecting out from the ship's side to give greater spread to lower rigging.

Q. What is a bridge?

A. A platform extending above the rail across the ship for the convenience of the officer of the deck. In ships of recent construction, the bridge is a platform extending out from, and surrounding, the military mast.

Q. What is the sea ladder?

A. Steps secured to the ship's side for use in coming on board when the gangway is unshipped. This ladder, as the name indicates, is used chiefly at sea.

Q. What are the accommodation ladders?

A. Ladders shipped at the gangway in port for convenience in coming on board.

Q. What is a goose neck?

A. It is a sort of an iron hook fitted in the end of a boom that allows it vertical and lateral motion at the same time.

Q. What are davits?

A. Outriggers projecting from the ship's side used for hoisting heavy articles or weights, such as boats and stores; also at hatches for ammunition, etc.

Q. What are hammock cloths?

A. Pieces of canvas for covering the openings to the hammock nettings.

Q. What are the hammock nettings?

A. Spaces along the rail in which hammocks are stowed when not in use; in modern ships the hammock nettings are below, in the living quarters of the crew.

Q. What is the galley?

A. The cooking range and compartments on board ship; in ships of recent construction, the galley is on the main-deck amidships.

Q. What is a magazine?

A. A place where powder is stowed. Battleships usually have three groups of magazines, one forward, one amidships, and one aft.

Q. What is a shell-room?

A. A place where shell is stowed. Shell-rooms are usually grouped in the same manner as magazines, and are adjacent thereto.

Q. How is the position of the waterline shown inside the ship?

A. A black line is painted all around inside at the proper height.

Q. For what purposes are the composition numbers placed on the bow and on the stern?

A. To determine the draft of the water at any time.

Q. How is the draft determined by these figures?

A. The bottom of each figure marks the exact even number of feet from the bottom of the keel; the tops of the figures indicate the half feet. The rest is estimated by the eye. For example, the bottom of the figure 9 is exactly 9 feet from the bottom of the keel. The top of the figure 9 is exactly 9 feet 6 inches from the bottom of the keel.

Q. What are the holds, storerooms, wardroom, cabin, steerage, sick bay?

A. Holds are usually forward; the gear of the ship is stored there. Store-rooms are located in various parts of the ship; they are used for stowing the various stores. The cabin is the quarters of the captain or the admiral. Wardroom, the quarters of all officers junior to the captain, except the junior officers who occupy the steerage as quarters. The sick bay is the hospital of the ship.

Q. What is a composite ship?

A. It is a ship with steel frames, longitudinals, and upper works, but the under-water body is made of wood so that it can be coppered.

Q. What is a sheathed ship?

A. It is a ship in which the hull, while completely made of steel like any other ship, has the under-water body covered with wood, and coppered outside.

Q. What is the advantage of a wooden under-water body?

A. It may be coppered, with the result that the ship does not foul quickly and may remain longer out of dock.

Q. Why could not a steel hull be covered with copper plates?

A. The galvanic action caused by copper and steel in salt water would eat up the hull of the vessel.

NOTE.—The few sheathed and composite ships that are in the Navy are of the gunboat or cruiser class. All the *Denver* type of cruisers, for example, are sheathed.

*General Outline of the Construction of the Ships.

(1) THE HULL.—The principal parts of the hull of a modern ship are named below, and the location of many of them are shown in the accompanying plates, showing views of the longitudinal and athwartship sections of a battleship.

(2) THE KEEL.—Usually composed of the outer and inner keel plates, the vertical keel and the main keelson with their accompanying angle bars. At its forward end the keel is continued by the stem, which is of great strength, and at its after end by the stern-post, also very strong and arranged to carry the propellers and the rudder.

(3) To the keel are attached the FRAMES, built up of main bars, floor plates, and reverse bars, all of which are strengthened and stiffened by longitudinals of various types. To these the outside plating is secured, the garboard strakes being adjacent to the keel plates. An inner bottom is fitted on large ships; this extends to armor shelf on battleships and monitors, and to the shelf plates on other vessels. The double bottom extends fore and aft to a greater or less degree from the midship section, depending upon the particular type of ship; it is subdivided into small cells by watertight frames and longitudinals, so that the leakage shall be reduced to a minimum if the ship touches bottom. The frames near bow and stern are spaced more closely than elsewhere to provide local strength, and breast hooks, ram plates, counters and transoms are fitted for like reasons.

* Copied from Knight's Modern Seamanship by permission of the publishers, D. Van Nostrand Company, New York.

(4) Bulkheads are used to subdivide the ship's interior vertically into watertight compartments for the preservation of buoyancy and stability; non-watertight bulkheads are also fitted to provide stowage and living spaces.

(5) Decks are primarily used to provide shelter, working spaces, and living quarters; secondarily, to subdivide the hull horizontally into a still greater number of watertight compartments. Those used for the latter purpose are of steel, and may or may not, be covered with planking or linoleum. Other decks are planked and caulked only, but deck stringers and tie plates are used to stiffen the deck beams, which are supported by stanchions in addition to the bulkheads. All of these are absolutely necessary to ensure the ship's structural strength. To secure accessibility to all parts of the ship, numerous hatches, doors, scuttles, and manholes are provided; these are watertight where necessary, and are always fitted for battening down on upper-decks.

(6) The Protective-Deck is a steel deck to protect the propelling machinery and other objects below the waterline.

Q. How is the armor disposed on a modern battleship?

A. (1) A waterline belt of heavy armor, about 8 feet wide, extends from well forward of the forward group of magazines to the after slope of the protective-deck, thus protecting the ship for about three-quarters of its entire length. This belt varies in thickness at the top from 10 to 12 inches, and tapers to about two-thirds that thickness at the bottom. At the ends of this belt, two belts of athwartship armor of about the same thickness connect with the longitudinal belt on the opposite side.

(2) Above the waterline belt, the casemate armor, about 8 inches thick, extends athwartships, marking the limits of the forward and after magazine spaces.

(3) The turrets are protected by barbettes from 8 to 10 inches thick; they extend down as far as the upper edge of the waterline belt.

(4) The turret armor is 12 inches thick in front. The side and rear plates are about 8 inches thick, and the top plates from 2 to 4 inches.

Note.—These figures for thickness of armor are, of course, constantly changing; the figures herein given are merely approximate.

(5) Conning-towers are built of heavy armor, about 12 inches thick; they are connected to the protective deck by

armored tubes about 6 inches thick, so as to prevent the system of steering and communication from being shot away. Both side armor and turrets have a thick backing of teak. The weight of armor and armor bolts is about one-fourth of the weight of the battleship.

(6) A protective deck of nickel steel extends the whole length of the ship; it rests on top of the waterline belt as far as that belt extends. Aft, and sometimes forward, the protective deck slopes at an angle of about 45 degrees from the horizontal.

(7) Cofferdams about 3 feet wide are worked inboard along the waterline, just above the protective deck; as a rule, they extend only along the unarmored portions of the waterline, forward and aft, although in some cases they extend the entire length of the ship. Cofferdams are filled with corn-pith cellulose which expands upon contact with the water in case the cofferdam is pierced by a shell; they are subdivided by watertight partitions.

Q. What is meant by the DRAINAGE SYSTEM?

A. It is a system by which water is pumped out of any compartment. Each compartment is either connected to the pumps by piping, or is arranged to drain through sluice gates into other compartments that can be pumped out. By means of the system of piping, nearly every pump in the engine and firerooms can be put on a compartment. In order to remove water in large quantities from any bilge compartment, there is a very large pipe about 15 inches in diameter called the main drain connecting with them; in case of serious leaks both circulating pumps can be put on the main drain. The secondary drain is a pipe about 5 inches in diameter, running on one side of the centerline of the ship throughout the length of the machinery spaces; it is connected with various drainage manifolds. This entire system of piping is called the drainage system of a ship.

Q. What is the VENTILATION SYSTEM?

A. It is the system of piping and fans by which fresh air is supplied to compartments below. Many fans are installed in a large ship; they pump air down through the ventilators into large trunks from which it is led into various compartments in smaller pipes. Each of these pipes has a small damper for turning the air on or off; the openings of these pipes are covered with wire netting which must be kept clean and free from loose paper and dust. The ventilation system also provides for the escape of foul air from closed compartments below. Natural ventilation is provided by cowls, or ventila-

tors, and windsails which, when trimmed to the wind, send fresh air below, forcing the foul air outboard through hatches, ports, etc., or through exhaust cowls which must, of course, be trimmed *from* the wind. In all large ships the ventilation system is very exhaustive, but all ships, large or small, use natural ventilation a great deal, and care on the part of the men will frequently increase their comfort a great deal. Care should be taken to see that there is every opportunity for supply and exhaust, so that a constant circulation may be maintained; or, in the case of artificial ventilation, that the wire gauze covers are not choked, and that the cowls are properly trimmed.

Q. How is watertightness secured in a ship?

A. Plates of the hull, bulkheads, or decks that are meant to be watertight are securely riveted, and the seams and butts are caulked, metal to metal. The planking of decks is made watertight by filling the seams with oakum, which is driven down—or caulked—then payed with hot pitch, or covered with glue or putty. Ports, hatches, watertight doors, etc., are made watertight by compressing rubber gaskets between their edges and suitable frames, by means of dogs, clamps, or turn buckles. All openings in watertight bulkheads and decks are similarly made watertight. In locations where rubber could not be expected to last, or for principal doors where it is necessary that they remain generally open, and be fitted to close quickly, doors are arranged to slide vertically, and become watertight by wedging the two metal surfaces together. These doors are usually capable of being operated from above. *It is most important that all appliances for securing watertightness be kept in an efficient condition.* If not, when the emergency comes, the various watertight compartments that have been relied on to keep the ship afloat in just such an emergency, will prove that they are not watertight, and we shall find that we have deceived ourselves into false security.

Q. When a watertight door or manhole plate is on hinges, how can a "dog" clamp the rubber gasket against the door frame?

A. The hole in the hinge is elongated so that on forcing the dog against the wedge on the door it is clamped up tight against the frame.

Q. How are the decks of a man-of-war named?

A. The first deck, complete from stem to stern, is the main-deck; above this are the superstructure and the bridge-decks. Below the main-deck is the gun-deck; and below the gun-deck

is the berth-deck. The protective-deck is usually just below the berth-deck.

NOTE.—On battleships the protective-deck is the same as the berth-deck, and the deck itself is called the armor-deck.

Below the protective-deck are the forward and after platforms, which are partial decks extending only to the engine-rooms.

NOTE.—The spar-deck is really a light deck running fore and aft above all other decks and not carrying guns; in this way it has happened that the main-deck has been often spoken of as the spar-deck.

(1) THE FOLLOWING NOMENCLATURE OF DECKS shall be followed for United States Naval vessels; this nomenclature will not apply to ships built, or those for which plans were completed on January 1, 1913.

(2) The highest deck extending from stem to stern shall be called the MAIN-DECK.

(3) A partial deck above the main-deck at the bow shall be called the FORECASTLE-DECK; at the stern, POOP-DECK; amidships, UPPER-DECK.

(4) The name "upper-deck" instead of "forecastle-deck" or "poop-deck" shall be applied to a partial deck extending from the waist to either the bow or the stern.

(5) A partial deck above the main, upper, forecastle, or poop-deck, and not extending to the side of the ship, shall be called the SUPERSTRUCTURE-DECK.

(6) A complete deck below the main-deck shall be called the SECOND-DECK. Where there are two or more complete decks below the main-deck, they shall be called the SECOND-DECK, THIRD-DECK, FOURTH-DECK, etc.

(7) A partial deck above the lowest complete deck, and below the main-deck shall be called the HALF-DECK.

(8) A partial deck below the lowest complete deck shall be called the PLATFORM-DECK. Where there are two or more partial decks below the lowest complete deck, the one immediately below the lowest complete deck shall be called the FIRST PLATFORM, the next shall be called the SECOND PLATFORM, and so on.

(9) Decks which for protective purposes are fitted with plating of extra strength and thickness shall be defined for technical purposes as PROTECTIVE and SPLINTER, in addition to their regular names. Where there is only one such deck, it shall be defined as "protective" and where there are two, that having the thicker plating shall be defined as "pro-

tective," and that having the thinner plating shall be defined as "splinter," in addition to their regular names.

(10) Where a protective deck is stepped a complete deck height, the respective portions shall be distinguished by means of the terms "middle protective section" and "forward (or after) protective section" in addition to their regular names. Where a splinter-deck is stepped a complete deck height, the respective portions shall be similarly distinguished.

(11) Where a portion of the protective- or splinter-deck is sloped, the sloping portion shall be defined as the INCLINED PROTECTIVE-DECK or INCLINED SPLINTER-DECK.

Q. What, in detail, is the PROTECTIVE-DECK?

A. It is an armored deck made of nickel steel plates, from 2 to 5 inches thick, usually with sloping sides and flat on top, extending fore and aft in nearly every battleship or cruiser. The crown of the deck is above the waterline, but the sloping sides join the side below the waterline, except in armored ships, where the waterline is well protected, in which case it rests on top of the side armor, but slopes down in the form of a turtle back in the ends of the ship. The vitals of the ship are protected by this deck, which, owing to its slope, really affords considerable protection. Gunboats frequently have a corresponding deck about one-half inch thick, called the watertight-deck.

Q. What are BULKHEADS?

A. Ships of the Navy are divided into several watertight compartments. The lines of division running fore and aft are called longitudinal bulkheads, and those running athwartship, transverse bulkheads. Watertight doors are fitted in these bulkheads to allow passage from one compartment to another.

Q. How determine the location of these various compartments on board ship?

A. The ship is divided transversely into four sections, represented by the letters A, B, C, and D, and the compartments are designated by numbers preceded by the letter of the section in which they are located.

Q. What compartments are in the limits of Section A?

A. All compartments forward of the forward fireroom bulkhead.

Q. What compartments are in the limits of Section B?

A. All compartments from the forward fireroom bulkhead to the after fireroom bulkhead, which is also the forward engineroom bulkhead.

Q. What compartments are in the limits of Section C?

A. All compartments from the forward engineroom bulkhead to the after engineroom bulkhead.

Q. What compartments are in the limits of Section D?

A. All compartments abaft the after engineroom bulkhead.

Q. What, in general, is the system of numbering the compartments on board ship?

A. The sections are divided longitudinally by the center line of the ship; all compartments on the starboard side are numbered in odd numbers, and all on the port side are numbered in even numbers.

Q. How are compartments above the protective-deck numbered?

A. In each of the individual sections the numbers begin with 100 and increase from forward aft; for example, A-100, A-101, A-102, etc.; B-100, B-101, B-102, etc.; C-100, C-101, C-102, etc.; D-100, D-101, D-102, etc.

Q. How are compartments between the protective-deck and the inner bottom of the ship numbered?

A. In each of the individual sections the numbers begin with 1 and increase from forward aft; for example, A-1, A-2, A-3, etc.; B-1, B-2, etc.; C-1, C-2, etc.; D-1, D-2, etc.

Q. How are compartments in the inner bottom—double-bottom compartments—numbered?

A. In each of the individual sections the numbers begin with 99 and *decrease from aft forward.* This, it will be noted, is in reverse order to the rule for numbering other compartments. No compartments except double-bottom compartments are numbered in the nineties.

Q. How are magazines and shell-rooms designated?

A. By the letter M following the compartment number; for example, A-5 M would indicate a magazine in the forward section, on the starboard side.

Q. What is the designation in the case of compartments in the same section that are not divided by the center-line bulkhead, but extend entirely across the ship, one abaft the other?

A. They are numbered consecutively, beginning with the forward one; for example, in the case of the forward trimming tanks on many ships, the extreme forward tank is A-1 and the next A-2.

Q. How do you find a given compartment on board ship?

A. The system of designation by letters and numbers that has just been explained gives the approximate location; and when once you are in the vicinity of a given compartment you will easily find it by observing the numbers that are placed on doors or bulkheads. These numbers are stamped or en-

graved on brass plates; they must always be kept brightly polished so that they may be easily seen.

Q. What are the Trimming Tanks?

A. The lower compartments in each extreme end of the ship are used as trimming tanks; sea valves are fitted for filling and suction pipes for pumping out. These tanks are filled or emptied as required in order to increase or decrease the draft at either end.

PART ONE

"G"

GENERAL FEATURES OF SHIPS OF THE NAVY OF DIFFERENT CLASSES

PART ONE.

"G."

GENERAL FEATURES OF SHIPS OF THE NAVY OF DIFFERENT CLASSES.

Q. How are vessels of the Navy classed?

A. Battleships: First line; battleships, second line. Battle isers. Armored cruisers: Cruisers, first class; cruisers, ond class: cruisers, third class. Gun boats, monitors, pedo-boat destroyers, torpedo-boats, submarines, and auxil-ies.

Q. How are they rated?

A. First rate are men-of-war of 8000 tons and above.

Second rate are men-of-war of 4000 to 8000 tons, and con-ted and auxiliary vessels of 600 tons and above, except liers and other vessels constructed or equipped for special poses.

Third rate are men-of-war 1000 to 4000 tons, converted and iliary vessels 1000 to 6000 tons, colliers, refrigerating ships, illing ships, tank steamers, repair ships, hospital ships, and er vessels constructed or equipped for special purposes 4000 tons and above.

Fourth rate are all other rated vessels.

NOTE.—Torpedo-boats, torpedo-boat destroyers, submarines, pedo or submarine tenders, while so acting, tugs, sailing ps, and stationary receiving ships are not rated.

Q. What are characteristics of each of these classes of sels?

A. BATTLESHIPS are vessels supposed to be able to fight any sel anywhere. The older type of battleship varies from 00 to 16,000 tons in displacement, and, generally speaking, ries four 12- or 13-inch guns mounted in turrets forward aft; from 12 to 16 guns of intermediate caliber, and m 20 to 30 small secondary guns. The authorization in 5 of the dreadnought *Delaware* marked a revolution in leship design for our Navy. Commencing with the con-ction of that vessel, battleships have varied from 20,000 2,000 tons in displacement. The "all-big-gun" feature is important consideration in this type of battleship. The sels carry from eight to twelve 12-inch or 14-inch guns unted in turrets on the centerline, and 16 or more secondary

battery guns of 5- or 6-inch caliber for the purpose of torpedo defence. Battleships carry heavy armor on waterline and barbettes, and 5- to 8-inch armor along in wake of berth-deck and armored broadside gun-positions. They have two steel cage masts. Their speed and power are moderate, and their coal capacity is considerable. Like all other steel ships they have cofferdams along the unarmored portions of the waterline to protect the ship from being flooded if pierced by a shell "between wind and water." All machinery necessary to the ship in action is installed below the protective- or armor-deck, and behind the thick waterline belt; the vessels are provided with an extensive system of watertight compartments, and with a complete double bottom. All the later type of battleships carry underwater torpedo-tubes. Battleships of less than 10 years age are classed as of the first line, those of greater age as of the second line.

BATTLE CRUISERS are built along the same general lines as battleships, but armor and armament are reduced in weight to allow for greater speed.

ARMORED CRUISERS are vessels not so powerful as battleships, combining high speed and considerable offensive and defensive power. They are about 14,000 tons in displacement, with a speed of 22 to 23 knots; they carry guns of a caliber not greater than 10-inch, and they are not so heavily armored as battleships. In other words, their gain in speed over a battleship is at the expense of their protection. They have moderate armor on turrets and barbettes, light waterline armor, with a heavy protective-deck and large coal capacity. They have one or more military masts.

CRUISERS are vessels of from 2000 to 10,000 tons, divided into three classes according to their displacement. They have good speed, no armor except on turrets and barbettes—which are rarely carried on that class—a complete protective-deck, varying coal capacity, numerous intermediate and secondary guns, and one or more masts, either military or for carrying sail.

GUNBOATS are light unarmored and unprotected vessels of less than 2000 tons. They are so variable in size and type that they are difficult to describe. They generally have a fairly good speed, good coal capacity, moderate battery, and sail either for steady or for auxiliary propulsion.

TORPEDO-BOATS AND DESTROYERS vary in tonnage; torpedo-boats from 50 to 300 tons; destroyers from 400 to 1000 tons. They are entirely unarmored or unprotected. They have very high speed and very poor coal capacity. They carry two or three torpedo-tubes and a number of secondary guns. They

are usually fitted with one signal pole. The latest destroyers carry 4-inch guns.

Monitors are vessels of moderate displacement—3000 to 6000 tons—with very low freeboard, waterline heavily armored, armored deck, poor coal capacity, low speed, one military mast. The battery generally consists of one or two pair of heavy guns mounted in turrets, two or four intermediate guns, and a few secondary guns. They make a very unsteady gun platform at sea, as they roll quickly; for this reason they are designed entirely for harbor defence.

Auxiliaries consist of transports, supply ships, hospital ships, fuel ships, converted yachts, and tugs, also certain special types of ships such as ammunition, torpedo practice, repair and mine depot ships.

Sailing Ships are of steel or wood. They are used in the Navy principally for training purposes. With one or two exceptions, all of the sailing vessels now in the service are ships of the old Navy; they are classed as "Unserviceable for war purposes."

PART ONE

"H"

EVENTS IN THE DAILY ROUTINE GENERAL DUTIES IN CONNECTION WITH LIFE ON BOARD SHIP

PART ONE.

"H."

EVENTS IN THE DAILY ROUTINE. GENERAL DUTIES IN CONNECTION WITH LIFE ON BOARD SHIP.

Q. What is meant by the DAILY ROUTINE?

A. It is a list of the various times during the day when certain duties are performed. The following are given as examples:

Daily Routine in Port.

A. M. 4.00 Call ship's cooks of the watch.

4.30 Fires started in running steamer.

4.45 Call masters-at-arms, boatswain's mates, buglers, and hammock stowers.

5.00 Reveille; call all hands, pipe "up hammocks," serve out coffee; light the smoking lamp.

5.15 Haul over hammock cloths and stop them down. Masters-at-arms report decks clear of hammocks.

5.20 Pipe sweepers. Sweep down thoroughly before decks are wet.

5.25 Off shoes and socks, or put on boots, according to weather conditions. Get out wash deck gear.

5.30 Turn to. Out smoking lamp. Execute morning orders. Stow away ditty boxes; clear lower decks. Five minutes before sunrise, station men for turning off anchor, boom and gangway lights. Scrub clothes.

6.00 Knock off scrubbing clothes; trice up lines; hoist ashes.

6.45 Take off gun covers and hatch hoods, unless the weather is foul. Hammock stowers haul back hammock cloths.

7.00 Up all hammocks.

7.15 Mess gear. Light smoking lamp. Publish uniform of the day.

8.00 Colors.

8.15 Turn to; out smoking lamp.

8.30 Sick call.

8.45 Retreat from bright work. Sweep down. Sto
away all wash deck gear and all ditty box
Clear up the deck for quarters.
9.10 Officers' call. Divisions fall in for muster.
9.15 Quarters for muster and inspection. Physic
drill followed by the drill prescribed.
11.30 Retreat from drill. Pipe down scrubbed clothe
if dry. Sweep down. Light smoking lam
Mast for reports and requests.
M. 12.00 Dinner.
P. M. 12.30 Band call. Band concert till 1.00.
1.00 Turn to. Out smoking lamp. Pipe sweeper
Pipe down aired bedding, if up. Pipe dow
wash clothes, if dry.
1.30 Drill call.
2.30 Retreat from drill. Turn to.
4.00 Knock off work. Pipe down clothes, if u
Sweep down. Light smoking lamp.
5.30 Clear up decks. Stow away ditty boxes.
5.45 Mess gear.
6.00 Supper. Five minutes before sunset call guard c
the day and band. Station detail for all light
Turn on lights at sunset.
6.30 Turn to. Pipe sweepers. Wet down after mai
decks for scrubbing clothes.
7.30 Hammocks. No smoking below the main deck
8.00 Muster the anchor watch. Searchlight and sign
drills, if ordered.
8.30 Trice up the clothes lines.
8.55 First call; out smoking lamp.
9.00 Tattoo. Pipe down. Silence. Muster and s
first anchor watch.
9.05 Taps.

Daily Routine at Sea.

A. M. 2.00 Relieve wheel and lookouts.
3.50 Call the watch section.
4.00 Relieve the watch. Muster the watch section a
life boat's crew. Light smoking lamp. C
ship's cooks of the watch. Five minutes befo
sunrise station details at running lights. Tu
off at sunrise. Relieve lookouts and stati
masthead lookouts.
5.00 Call idlers and section of the watch sleeping i
Coffee.

5.20 Pipe sweepers.
5.30 Turn to; out smoking lamp. Execute morning orders.
6.00 Relieve the wheel and lookout. Trice up clothes lines.
6.45 Hammock stowers haul back hammock cloths.
7.00 Up all hammocks.
7.15 Hammock stowers stop down hammock cloths. Mess gear. Light smoking lamp.
7.30 Breakfast. Shift into the uniform of the day during the meal hour.
8.00 Relieve the watch (both sections on deck). Muster watch and life boat's crew.
8.15 Turn to. Out smoking lamp. Deck and gun bright work.
8.30 Sick call.
8.45 Knock off bright work. Sweep down. Stow away ditty boxes and wash deck gear. Take down towel lines. Clear up decks for quarters.
9.10 Officers' call. Divisions fall in for quarters.
9.15 Quarters for muster and inspection. Physical drill, and drills as prescribed.
10.00 Relieve the wheel and masthead.
11.30 Retreat from drill. Pipe down washed clothes, if dry. Sweep down.
11.45 Mess gear.
M. 12.00 Dinner.
M. 12.30 Relieve the watch.
1.00 Turn to. Pipe sweepers. Out smoking lamp.
1.45 Drill call, if ordered.
2.00 Relieve the wheel and masthead.
2.15 Retreat from drill. Pipe sweepers. Turn to.
3.30 Pipe down wash clothes, if up.
4.00 Relieve the watch. Muster watch and life boat's crew.
4.30 Sweep down. Knock off ship's work. Light smoking lamp. Five minutes before sunset station details at running lights. Turn on running lights with senior ship present. Station deck lookouts. Muster life boat's crew. Inspect life boats.
5.30 Clear up decks. Stow away ditty boxes.
5.45 Mess gear.
6.00 Supper. Relieve the wheel and lookouts.
6.30 Turn to. Sweep down. Wet down after main-deck.

7.00 Band concert for crew until 8.00.
7.30 Hammocks. No smoking below decks.
8.00 Call the watch. Relieve the wheel and lookouts. Relieve the watch. Muster watch and life boat's crew. Turn out all but standing lights and lights in officers' quarters and chief petty officers' mess room.
9.00 Out smoking lamp. Turn out lights in chief petty officers' mess room.
10.00 Relieve the wheel and lookout. Turn out lights in officers' quarters unless an extension has been granted.
11.50 Call the watch.
Midnight. Relieve the watch. Muster the watch and life boat crew.

Questions on the Routine.

Q. What is done at REVEILLE?

A. The buglers sound reveille with the stroke of the bell, if occurring on the half-hour. The boatswain's mates, in concert, pipe their call, "All hands," and get the crew turned out quickly. The masters-at-arms make rounds of the berth-deck to see that all men are out promptly and are dressing and lashing hammocks. The cooks—who have been called earlier—get coffee ready for serving out to the different divisions.

Q. HOW ARE HAMMOCKS LASHED?

A. The hammock lashing is a piece of 12-thread manila rope, one end of which is eye-spliced and the other end whipped. Lay blankets in neat folds in center of mattress; draw edges of hammock together; see that skin of hammock is smooth. Haul taut the loop of the lashing around head of hammock; have no bedding showing. Counting this as first turn, take seven turns with marline hitches at equal distances apart. After the seventh, or foot turn, similarly taken around the end of the hammock, without bedding showing, take round turn about foot, and expend end by neatly tucking along belly of hammock. All turns should be taut, and the hammock stiff with a smooth skin. Unhook one end, and with hammock held under the arm, off the deck, twist clews well and tuck neatly under lashing along belly, hauling taut and beating end of hammock well down. Proceed in same manner with the other end, then stow hammock in netting. Hammocks should be inspected by a petty officer of the division. If they are improperly lashed, men should be made to relash them.

Q. HOW ARE HAMMOCKS STOWED?

A. Each division has a netting where its hammocks are invariably stowed. The hammock stower is called 10 minutes before reveille, and should be in the netting at reveille to arrange the hammocks left in the netting in the desired order, and to receive the hammocks of men who have turned out early; such men may bring their hammocks up for stowing immediately after reveille is sounded. The anchor watch should trice up, or roll back the hammock cloths before reveille. Men with hammocks properly lashed go to their nettings and pass the hammocks to the stower, who stows them with their numbers up and out. On some ships, hammock stowers are petty officers detailed by division officers. In this case the hammock stowers require the men to stow their hammocks properly.

Q. When are the hammock cloths hauled over?

A. When the masters-at-arms report all hammocks up.

Q. What are six-bell hammocks?

A. The hammocks of certain men who have had night watches; these men are allowed to sleep in until seven o'clock. Some men also who have been up late on duty may obtain permission from the officer of the deck to sleep in. When these six-bell hammocks are stowed, the hammock cloths are stopped down for the day, and the nettings are afterwards entered only by permission from the officer of the deck.

Q. How long should it take from reveille until all hammocks are stowed, and hammock cloths hauled over?

A. Ten minutes is ample time. Men with late hammocks should be put on the report.

Q. What is meant by "TURN TO"?

A. It is the signal for morning work to begin. On special occasions, such as coaling, painting ship, etc., the time of "Turn to" may vary greatly; the time is always specified in the "Morning orders" of the executive officer. It is also a signal to begin ship's work at the conclusion of the meal hour.

Q. What is done by the crew between hauling over hammock cloths and "Turn to"?

A. That time is allowed them to get morning coffee, a smoke, and, if it is a morning for scrubbing clothes, to get out soap, scrub-brushes, and soiled clothes.

Q. WHAT IS DONE AT "TURN TO"?

A. Smoking ceases; the smoking lamp is put out. Morning work begins. Sweepers are piped. Gear is laid up off the deck to keep dry, and preparations for cleaning ship are made.

Q. What is meant by PIPING SWEEPERS?

A. It is a pipe sounded by the boatswain's mates as an order for the men of the various divisions who are detailed as

sweepers to get their brooms and sweep down the part of the ship assigned them. Sweeping should always be done before morning work in order to remove loose dirt, and to have a clean deck for scrubbing clothes.

Q. What parts of the deck should be swept?

A. The sweepers should sweep every part of the deck, particularly all corners. Men must always make way for the sweepers. The petty officers of the various parts of the ship are particularly charged with the thoroughness of this duty. The sweepings should never be swept into a scupper, but always into a dust pan and then they should be thrown into an ash chute.

Q. During the daily routine, when sweepers are piped, what orders usually accompany the pipe?

A. "Clean out all the spit kids, and wipe off all the ladders." The spit kids are taken to the head, emptied and washed out, and about one inch of water is put in them before they are returned to their places. All ladders in the ship should be wiped off with a damp swab.

Q. What is done in the morning watch after sweeping down?

A. The word is passed, "Wet down the decks." The various parts of the ship proceed to wet down with clean salt water. This is accompanied by the use of small rubber wash deck hose led from a hydrant on the fire main. Every part of the deck is wet down thoroughly. When washing decks, if the temperature permits, the crew will take off shoes and socks. In cold weather rubber boots are worn while washing down.

Q. What is done after the decks are wet down?

A. If it is a morning for scrubbing, the boatswain's mates pipe and call, "Scrub and wash clothes," or "Scrub hammocks (bags, blankets, or mattress covers)"; otherwise the word is immediately passed, "Scrub down the deck," or "Scrub down the deck with sand," "Clean all paint work."

Q. HOW ARE CLOTHES SCRUBBED?

A. They are laid flat on the deck, soaked with salt water, soap, and scrubbed thoroughly. Particular attention must be given to scrubbing the tape and seams, which collect much dirt. After very thorough scrubbing with brush, be very careful to wash thoroughly and remove all soap, as it can be plainly seen in blue or white, and is injurious to the cloth if not washed out. If several pieces are to be scrubbed, after finishing one piece, wring it out and lay it aside on a place clear of soap, and go ahead with the next piece.

Q. When the word. "Scrub hammocks," or "bags," is passed, does that give permission to scrub clothes also?

A. No. Unless the word "Scrub clothes" is passed, no clothes will be wet. There may be no place to dry them, and, as a rule, clothes are not scrubbed the same day with hammocks. Bags and hammocks are frequently scrubbed the same morning, but neither will be wet until the word is passed.

Q. HOW ARE HAMMOCKS SCRUBBED?

A. By laying them on deck, and scrubbing them like clothes.

Q. HOW ARE BAGS SCRUBBED?

A. Bags must be scrubbed thoroughly, *both inside and out;* the seams especially must be thoroughly scrubbed.

Q. What does the word, "Scrub and wash clothes" mean? That is, is it optional or not for a man to scrub"?

A. It is a positive order for every one having soiled clothes in his bag to scrub them.

Q. How often are clothes scrubbed?

A. As a rule, clothes may be scrubbed every morning except Sundays and holidays, and every evening except Saturdays and the evenings before holidays in port. In addition to the opportunity for scrubbing clothes in the morning watch, the pump is started on a portion of the deck set aside for this purpose at 4.30 p. m., and the decks must be dried down by 6.00 p. m. Clothes will not be triced up while going in or out of port, nor during the firing of salutes. Vessels without drying rooms do not have any scrubbing of clothes the night before leaving or entering port.

Q. What about soaking clothes over night?

A. Clothes should never be put in soak unless it is ascertained that they can surely be scrubbed the next morning. If you have wet clothes about the decks, you are liable to a report. Washing clothes out of hours is an offence, and consequently should not be permitted; it is always accompanied by undesirable and unhealthful wetting of the deck, and the soap dries on the deck and becomes very hard to remove.

Q. What does the order SCRUB BLANKETS, or SCRUB MATTRESS COVERS mean?

A. As this is done with sufficient frequency to keep blankets and mattress covers clean, it must be regarded as an "all hands" job, and every man must scrub, unless specially excused. This word does not mean to scrub clothes, and no clothes will be scrubbed unless the word is passed, or permission obtained to do so.

Q. What warning is given before the lines are triced up?

A. The word is passed, "Get your clothes forward and stop them on the line." The lines should go up 10 minutes from the time this order is passed. It is therefore necessary to get the clothes forward immediately. When the clothes are on the line they are triced up.

Q. What is done after the clothes lines have been triced up?

A. Morning work begins. Word is passed, "Scrub down the decks"; "Clean off all paintwork"; "Go over the side the side-cleaners"; "Boatkeepers clean out your boats." Boatkeepers go in their boats and thoroughly clean them. Side-cleaners get stages and go to work cleaning the side. The captain of the part of the ship generally starts a part of his men cleaning paintwork, while the remainder get deck-scrubbing brushes and go down the deck abreast and in stroke, thoroughly cleaning every part of the deck. It is not advisable for a few men to scrub at random. Sand, if used, assists in cleaning decks. In cleaning paintwork, sand and canvas take off the paint as well as the dirt unless great care is used. Fresh water and very little soap will often save much labor. Lye eats off paint and should not be used. Rust spots can be removed by canvas and fresh water if care is exercised. Greasy dirt is the hardest thing to remove. For that reason care must be taken by every member of the crew to keep the paintwork clean. Cleaning paintwork does not mean the cleaning of only certain exposed places; so far as possible every nook and corner should be cleaned every morning.

Q. What is meant by FIELD DAY?

A. Saturday morning is very often devoted to cleaning ship. The decks are not dried down before breakfast, but all gratings, ladders, oars, and, when necessary, boat covers and spar covers, are scrubbed. Everything that is movable is broken out in order to scrub beneath it. Sand is nearly always used, and the cleaning continues well into the day. Coaling ship is always followed by a field day.

Q. What is done after scrubbing decks?

A. After the decks are thoroughly clean, various little cleaning jobs are done. There is always enough cleaning to occupy the time fully. Men also take this time to bathe or wash themselves. Finally the word is passed, "Wash down the decks."

Q. What is done at this order?

A. Long bristle scrub-brooms are used. The men are careful to get into every nook and corner and wash all dirt, sand and soap off the deck into the scuppers. Corn brooms should never be used on a wet deck; they are immediately ruined. If old ones are used by experienced men, it sets the example

and very soon the men of less experience are using the newest brooms procurable. When the word, "Dry down the deck" is passed, men with squilgees form abreast, and go down the deck shoving the water before them. Squeeze down hard on the deck. The squilgees are meant for this purpose; swabs have their uses, but this is not one of them. The squilgee gets most of the water off the deck. A swab used in the wake of the squilgees is serviceable in removing water from corners and deck sockets.

Q. What parts of the ship are cared for by the deck force, and what parts by the engineer's force?

A. The deck force is responsible for the cleanliness and good condition of all compartments and double bottoms, and all bulkheads, doors, pipes, and valves within them, except those specified as coming under the supervision of steam engineering. The deck divisions also clean casings and bulkheads around all machinery outside of engineer compartments, and all pipes, ventilators, hatches, and bulkheads, except when otherwise ordered by the captain. Besides the steam machinery, the engineers are responsible for the cleanliness and good condition of all bulkheads, doors, valves, and pipes within the engine rooms, boiler rooms, shaft alleys, firemen's wash rooms, engineer's storerooms, workshop, all compartments and double bottoms within the line of such bulkheads and compartments and double bottoms accessible only through the engine room. During the time set aside for cleaning ship, the engineer's division is set to work cleaning the part of the ship assigned.

Q. Who are COMPARTMENT CLEANERS?

A. Men detailed by the division officers, with the approval of the executive officer, to keep the compartments below the main-deck in a satisfactory condition. While the rest of the division work on deck during the morning watch, the compartment cleaners work in their respective compartments, cleaning the paintwork, swabbing the deck, etc. Compartment cleaners are not excused from quarters, or from any drills except by order of the executive officer.

Q. What is done after drying down decks in the morning watch?

A. Preparations are made for breakfast. Unfinished work stops until after breakfast. During the breakfast hour men shift into the uniform of the day.

Q. What is the first thing done at "Turn to" after breakfast?

A. "Gun and deck BRIGHT WORK" are sounded. The call is the same, followed by *one* blast for deck bright work, *two*

blasts for gun bright work. Men previously detailed clean the bright work assigned to them, whether steel or brass. Bright work is a term applied to metal objects that are kept bright by polishing. Bright woodwork is a term applied to the woodwork that is scraped and scrubbed.

NOTE.—Bright-work gear must be carefully stowed in the place set aside for it, immediately after knocking off bright work. Polish is too often wasted on board ship; and frequently the rags and polish are stowed in voice tubes or left about the decks. Men detailed to clean bright work must secure their gear properly; it should not be necessary for a petty officer in charge of a part of the ship to tell a man to stow the gear properly every time that bright work has been cleaned.

Q. What is done at "Knock off bright work"?

A. The call is sounded on the bugle. Bright work must be completed by the time the call is sounded. Men should now get themselves clean and ready for quarters, black shoes, brush clothes, etc. At the same time, the deck is cleared up for quarters. The word is passed, "Take down the towel line; clear up the deck for quarters," all wash-deck gear, buckets, ditty boxes and towels are stowed away, and everything is made ready for inspection.

Q. How do you get excused from duty if you are ill?

A. Go to the medical officer of the ship. Your division officer is not a doctor, and he has no authority to excuse you.

Q. What is the customary time of day to see the doctor?

A. At 8.30 a. m., when SICK CALL is sounded.

Q. In case you are sick, can you report it or not, as you like?

A. No; you are obliged to report any serious illness immediately. Should the medical officer suspect you of concealing a disease, he can report the matter to the captain.

Q. What is malingering?

A. It is feigning sickness. It is a serious offence, is rarely successful, and it is unmilitary and dishonest in that it involves lying. It leaves your work to be done by others who, in addition, have their usual duties to perform.

Q. What is meant by QUARTERS?

A. It is the formation for muster and inspection. Morning quarters is held at 9.15. The signal for quarters is the "Assembly" sounded on the bugle. The "Officers' call" is sounded five minutes before the "Assembly." Men of the various divisions fall in for muster in the respective parts of the ship assigned them. The division officer inspects the men, espe-

cially as regards the condition of their clothes, cleanliness, length of hair and beard. Clean clothes must always be worn to quarters. Men must be carefully shaved, and neat in every respect. The division is mustered by the petty officers in charge of sections, and reported. The division officer then reports to the executive officer. Meanwhile the division may be allowed to "rest," but if the division officer, or a petty officer, has not given this order, absolute silence in ranks must be maintained; and if the order "at ease" has not been given, men must stand at the position of "attention" and maintain absolute silence.

Q. What is usually the first drill after the division has been reported?

A. Physical drill, or "setting-up" exercise. The primary object of the setting-up exercise is to increase and maintain the development and suppleness of a man's muscles, and to correct the most common physical defects that result from the neglect of *systematic exercise*. Every man should take pride in his physical condition; he should learn the correct position of the trunk, head, chest, and shoulders. Careful and conscientious work during the few minutes' setting-up drill will correct stooping and rounded shoulders, strengthen the back and abdominal muscles, and increase the lung capacity.

Q. What is done when DRILL CALL is sounded?

A. Men go quietly to their stations for drill; they take these stations *at double time*.

Q. Who is the officer of the deck during quarters?

A. The navigating officer.

Q. How is the forenoon occupied after drill?

A. There is usually a sufficient amount of ship's work to occupy the men of every division. Extra drills for men who are deficient are also held at this time.

Q. How much time do men have at dinner?

A. One hour, except under unusual circumstances. All honors are dispensed with during this time, and no work is required except in emergencies. On battleships the band usually plays after dinner.

Q. What takes place at 1.00 p. m.

A. "Turn to." Sweepers are piped; the smoking lamp is out, wash clothes are piped down and preparations are made for afternoon drill.

Q. How is the drill specified?

A. In each squadron it is laid down in the routine. Half an hour is devoted, previous to afternoon drill, to the instruc-

tion of men who volunteer, or for those who are particularly backward, in various subjects in the line of general instruction After this half hour's instruction, all men on board ship receive instruction in professional subjects for three-quarters of an hour.

Q. How is the afternoon occupied?

A. After drill, various jobs of ship's work are done—work in the holds, stowing boats, etc Men go on liberty. In the latter part of the afternoon quarters is sometimes held for muster and inspection, or for serving out bags and hammocks.

Q. How do you know when you can go on LIBERTY?

A. The word is passed and a notice posted to the effect that men of a certain conduct class have liberty, or that there is general liberty. You write your name on the list which is afterwards copied in the "liberty book." Word is passed, "Lay aft the liberty party"; "Lay aft on the quarter-deck; fall in for inspection." You must take care that your uniform is clean and complete, otherwise you may lose your liberty.

Q. What general regulations govern you while you are on liberty?

A. The general regulation that "all offences committed on shore shall be punished in the same manner as if committed at sea." This requires the same respect to officers, the same salutes, conduct that will not bring discredit on your ship, behavior that will not disgrace your uniform. In case you violate these rules, you are apt to be arrested by the patrol of petty officers who are sent ashore to prevent the conduct of a few men, who may be lacking in self-respect and decency, from reflecting on the entire Navy.

Q. What is the difference between Saturday and daily INSPECTION?

A. On Saturday the uniform is usually "dress," and men should wear the best they have, and be scrupulously clean and neat in appearance. After the division officer inspects and reports to the executive officer, ranks are opened and the front rank is faced about and dressed. When the captain approaches in the course of his inspection, the order, "Right hand, Salute," is given. Every man salutes with his right hand, looks toward the captain, keeps hand at cap until the salute is returned, then drops hand smartly to side. The captain then inspects the division.

Q. What is meant by the call, "All hands to muster"?

A. Divisions fall in at quarters, and are marched by their division officers to the quarter-deck. The officers then turn their divisions over to the senior petty officers of the division,

and form line on the starboard side of the quarter-deck. The reading of all general orders and communications affecting men, sentences of court-martial, the presentation of medals, etc., take place with the crew in this formation. On the first Saturday of each month, the "Articles for the Government of the Navy" are read.

Q. What is the routine on Sunday?

A. Quarters is held for muster Men are encouraged, but not compelled to attend divine service. Only work that is absolutely necessary is done.

Q. How is the ship's company divided?

A. Generally speaking, into two WATCHES, the starboard and the port, organized into DIVISIONS. Each turret is manned by a division, numbered 1, 2, 3, 4, 5, and 6, from forward aft. The broadside battery is manned by two divisions, and, on some ships, a part of this battery is manned by the marines. The broadside battery divisions would be numbered, in this example, the 7th and 8th divisions. The engineers would constitute the 9th division. The pay division would be the 10th, the surgeon's division would be the 11th, and the marines the 12th division. It must be understood that this is merely an example; different ships have different principles of organization, adapted to the construction of the ship. The divisions are divided into PARTS 1, 2, 3, and 4; the first and third parts being the starboard watch, the second and fourth the port watch. For convenience in making out station bills, each man of the division has a number assigned him. For example, 3114, shows that a man is in the first part, or section, of the third division. In general, the first figure indicates the division, the second figure the part, or section of the division.

Q. Aside from its meaning in regard to the organization of a ship's company, what other meaning has the word WATCH as applied to the length of a period of duty?

A. By "watch" is meant one of the periods of time into which the day is divided for convenience in assigning duty on board ship; or it is the time that one watch remains on deck. The FIRST WATCH lasts from 8.00 p. m. to midnight. (NOTE.—Do not make the mistake of calling the "first watch" the "evening watch"; there is no "evening watch.") The MID-WATCH is from midnight until 4.00 a. m., the MORNING WATCH from 4.00 to 8.00 a. m., the FORENOON WATCH from 8.00 a. m. to noon, the AFTERNOON WATCH from noon to 4.00 p. m. The DOG WATCHES are two watches, each of which is two hours in length; the FIRST DOG is from 4.00 to 6.00 p. m.; the SECOND DOG is from 6.00 to 8.00 p. m. In referring to the watches,

always call them by name, the first watch, the mid-watch, the morning watch, etc., and *avoid the unseamanlike habit of referring to them by the time they last,* as the eight-to-twelve, the four-to-eight, etc.

Q. What do you do when you are on watch at the masthead, at the wheel, as a messenger, or elsewhere, and "all hands" are called for the purpose, for example, of airing bedding?

A. Every man on watch has a relief whose duty it is to hasten through his own work in obedience to the call, and then to relieve the man on watch. The relief is the man who would naturally relieve the man on watch should the latter become disabled. A relief is not entirely off watch, he is doing a relief watch and is rarely needed for actual duty, but in any instance when he knows that the man actually on duty must be relieved, it is his duty to relieve immediately, without being ordered to do so. Suppose, for example, you had to come on watch at 2.00 p. m., and at 1.00 p. m. hammocks were aired; after you had secured your hammock, you should relieve your man without further orders, in order to allow him to get his hammock and air bedding. As soon as his hammock is secured on the ridge rope, he should immediately return and relieve you.

Q. What is the GENERAL MESS?

A. The various messes into which the ship's company is divided for convenience in seating the men at their meals. The number of your mess is on your station billet, or it is posted on the bulletin board.

Q. What, in general, are the duties of a MESSMAN?

A. Each mess has a messman detailed by the executive officer, upon the recommendation of the division officer. These messmen receive $5 per month in addition to the pay of their rating while so acting. The usual detail is for a period of two months. The duties of a messman are to keep the mess table, and the mess gear clean; to draw provisions; to assist in the preparation of all food for cooking, and to turn it over to the ship's cooks. Messmen are excused from all work in the part of the ship to which their division is assigned. As a rule, they do not stand watch, day or night. They are required to attend battery drills in the forenoon, and all general drills. Messmen detailed to assist cooks in peeling vegetables, etc., are not, as a rule, required to attend afternoon drills. White working uniform is the working dress for messmen, but at morning quarters they are usually required to wear the uniform of the day. They are not required to coal ship, but assist

in the preparation of meals, serving out any extra rations that may be ordered, and carrying water and coffee to men engaged in coaling. Messmen serve all portions at meals and serve rehelpings, without requiring the men of the mess to get up and help themselves. Masters-at-arms are in general charge of messes on their respective decks and compartments. They are responsible for proper service at the mess tables, for the cleanliness of the messmen, the cleanliness of mess gear, and for general cleaning up after meals.

Q. What are the regulations regarding SMOKING ON BOARD SHIP?

A. (1) The crew shall be permitted to smoke from "all hands" to "turn to," during meal hours, and from the time the hammocks are down until tattoo. The crew may also be permitted to smoke at other times, such as during holidays, on Saturday and Sunday afternoons, during coaling ship and cleaning up after coaling, and for a limited period during night watches; but these are privileges which may be withheld and should be withheld if they lead to soiling the ship or to other abuses.

(2) Smoking in any part of the ship during divine service is forbidden.

(3) SMOKING IN THE SHIP'S BOATS, not on detached service, IS FORBIDDEN.

(4) AFTER THE HAMMOCKS ARE DOWN, THE CREW SHALL SMOKE ONLY ON THE UPPER-DECKS.

(5) The chief master-at-arms shall have charge of the smoking lamp and see that it is kept lighted during smoking hours only. He shall take care that there is no smoking in unauthorized places and that the galley fires and other lights are not used by the smokers.

(6) While fuel oil is being taken on board, no open light, smoking, or electrical apparatus liable to spark shall be permitted within 50 feet of an oil hose, tank, compartment containing a tank, or the vent from a tank. No smoking shall be permitted *at any time* in a compartment containing a fuel-oil tank or fuel-oil pumps or piping, except that it may be permitted on the fireroom floor in front of the furnaces.

(7) There shall be no smoking while ammunition is being received on board.

Q. What about spitting on the decks?

A. Spit kids are placed throughout the ship; they are to be used. Men must bear in mind that SPITTING ON THE DECKS, or in the waterways, is ONE OF THE FILTHIEST POSSIBLE HABITS; they must remember that by spitting on the decks they foul their own living quarters.

Q. What are the regulations regarding GALLEY FIRES?

A. All fires used for cooking shall be extinguished at tattoo, unless they are specially authorized by the captain to be continued longer for some specific purpose. When the weather is very warm, they shall be extinguished as early as possible, if by so doing the comfort of the crew is increased.

Q. What are the regulations regarding LIGHTS on board ship?

A. (1) All lights except those in the cabins, offices, officers' quarters, and those designated as standing lights, shall be extinguished at tattoo.

(2) The lights on the lower decks shall be reduced in number before tattoo, unless they are required for the comfort of the crew. All lights in the holds, storerooms, and orlops, and all open lights in the ship, except those in officers' quarters, must be extinguished before 7.30 p. m., or at the time of the evening inspection by the executive officer.

(3) There shall be at all times during the night a sufficient number of standing lights throughout the open part of the ship to enable the officers and crew to turn out, repair to the upper decks, or to attend to any duty arising from a sudden emergency.

(4) During rainy or cloudy weather and at other times, when the duties of the ship will permit, sufficient artificial light shall be supplied between decks for the crew to read, write, or engage in recreation.

(5) Uncovered lights shall never be left unattended in any part of the ship, and covered lights shall always be so secured as to prevent their breaking or capsizing. Uncovered lights shall never be used in holds, storerooms, orlops, lockers, bilges, or other places below the berth-deck, except to test the air.

(6) Such light and fires as the captain may deem dangerous shall be extinguished when the magazines are opened, or when handling or passing powder, explosives, or other dangerous combustibles.

(7) In time of war, or when necessary to conceal a ship from an enemy, only such lights shall be used as are deemed advisable by the senior officer present.

(8) When at torpedo defence, the order is given, "Darken ship," *every light* that could possibly be seen from outside the ship must be extinguished; the captain will designate these lights for his own ship; and when the order is given to darken ship, there must be no question but that every light so designated must be extinguished instantly.

Q. What is the regulation regarding MATCHES on board ship?

A. None other than safety matches are permitted on board, and the captain prescribes the necessary precautions to be observed in their use. They shall not be used in storerooms, holds, or orlops, and care shall be taken that persons about to enter the magazines and shell rooms have no matches about them.

Q. How are the regulations regarding lights and fires enforced?

A. At 8.00, 9.00, and 10.00 p. m., the chief master-at-arms makes rounds to see that fires and lights are extinguished as ordered, reporting the result of his inspection to the officer of the deck. During the night the corporal of the guard makes the rounds for the same purpose.

Q. What are the regulations in regard to BOAT TRIPS?

A. When in port, and when sanitary conditions, exercises, and the duties of the ship permit, regular trips of the ship's boats shall be made at such hours as the captain may think proper. In order that officers and men may conveniently return on board for their meals, and at night, trips should be appropriately timed. Liberty men returning on board at night, before the expiration of their liberty, shall be permitted to sleep in until 7.00 a. m.

Q. What about the DISPOSAL OF REFUSE?

A. Wood, barrels, packing boxes, or unpierced metal cans shall not be thrown overboard, either in port or at sea. All such boxes and barrels must be broken up and sent to the fireroom; all metal cans must be pierced before being thrown overboard. In confined ports where garbage would constitute a menace to the health or a nuisance to people in the vicinity, it shall not be thrown overboard, but shall be burned on board ship or otherwise disposed of in some suitable manner prescribed by proper authority.

Q. What about AIR and GUN PORTS?

A. When at sea, no ports shall be opened without the knowledge and the consent of the captain; and they shall always be opened and closed by men specially appointed for that duty. Ports on the lower decks shall be closed at sunset unless special authority is granted to keep them open; and a report shall always be made to the officer of the deck when a port is opened or closed. Neither gun nor air ports shall be opened when there is any probability that water will enter to a dangerous extent. *Nothing is to be hung up, or placed in, or thrown out of gun ports, or air ports, or thrown over the side.*

Q. Who takes charge of the effects of absent members of the crew?

A. The chief master-at-arms takes charge of the effects of all absent and deceased members of the crew and holds them until they are disposed of by order of superior authority. He takes charge of the bag and hammock of anyone who is absent without leave, reporting his action to the executive officer. The effects of deserters are sold at public action on board ship.

Q. Can private property such as oil, explosives, or inflammable liquid be brought on board?

A. No; but private ammunition may be brought on board, if stored in the magazines.

Q. What is the regulation in regard to INTOXICATING LIQUORS?

A. No enlisted man shall take, or keep, any malt or other alcoholic liquors or intoxicants, nor any intoxicating or narcotic substances on board ships of the Navy, or within the limits of naval stations, marine barracks, or other commands; nor shall any such liquors, intoxicants, or substances be sold or given to any enlisted man, except for medical purposes, within such naval jurisdiction. Cocaine or opium using, or having either unlawfully in possession on board ship or elsewhere, will be punished by a court-martial.

Q. What about LOITERING in various parts of the ship?

A. There will be no loitering about the ship's store, scuttle butt, barber's shop, carpenter's shop, bakery, galley, or offices, nor anywhere on the gun- or berth-decks during working hours, or during watch on deck at sea. There shall be *no loitering* about ditty box or bag racks, nor in head or wash rooms, *nor in or about boats, whether hoisted or not.* Men are never permitted to lean on the life lines. When lined up to watch anything of interest over the side, *they must always keep off the rail or life lines.* The same rule applies when at work hoisting stores, etc.—KEEP OFF THE LIFE LINES.

Q. What is the regulation in regard to writing for newspapers?

A. No person in the Navy shall act as a correspondent for a newspaper or a periodical, without the express permission of the Navy Department. Photographing any part of the ship is forbidden, without express permission of the commanding officer.

Q. What about CARD PLAYING?

A. It is usually forbidden below the berth, or the third deck, at any time; card playing, checkers, and similar games of

chance and skill are usually permitted on the main-deck during the dinner hour, and after working hours, while the smoking lamp is lit. Men playing *at other times* will be punished, and the cards confiscated. Dice are forbidden to be used, or had in possession, and whenever found they are confiscated. GAMBLING IS FORBIDDEN in any form, at any time or place. Onlookers at gambling are liable to be punished as well as players.

Q. WHEN ARE MEN ALLOWED ON THE QUARTER-DECK?

A. Only when they are there on duty; when the duty has been performed they must leave the quarter-deck. In officers' quarters no men are allowed except on duty. *Bridges are for men on duty only.* Turret tops must always be kept clear.

Q. What about keeping clear of hatches, doors, etc.?

A. Keep off all hatches and skylights and lay nothing on them. KEEP OFF THE ENGINEROOM HATCH. Passages, gangways, doorways, and ladders must not be obstructed. On meeting an officer, going up or down a ladder or through a door or passage, draw back, well clear, to allow him free passage.

Q. What is the regulation in regard to the ship's keys?

A. Under no circumstances are they to be taken from the ship.

Q. What is the regulation regarding VISITORS?

A. They are never allowed below the gun-, or second-deck, unless accompanied by an officer; they are never allowed in the turrets or on the bridge unless accompanied by an officer. They are allowed on board ship only with the permission of the officer of the deck at certain stated times established by the executive officer.

Q. What about keeping paintwork clean?

A. Paintwork must not be soiled by finger marks, by men getting against it with dirty clothing, or with shoe marks, nor scarred by careless handling of gear.

Q. What is the LUCKY BAG?

A. Clothing and other private gear found in unauthorized places will be kept in the lucky bag, in charge of a master-at-arms. Regulation clothing, or other articles not contraband, may be claimed during a meal hour, or at such other time as the executive officer may direct; or when the owners can be identified, they will be required to take charge of their property. In either case, as a rule, they are put on the report for having carelessly left clothing about the decks. Non-regulation clothing will, of course, never be returned to the owners. Un-

claimed articles in the lucky bag are sometimes sold at auction, the proceeds being devoted to the ship's athletic fund.

Q. What should be done with all articles of personal property that are found lying carelessly about the ship?

A. They must be turned over to the chief master-at-arms.

Q. What is the regulation regarding the use of hatch tarpaulins?

A. Hatch tarpaulins and hatch hoods must not be used for any purpose except for covering the hatches.

Q. Where must buckets be stowed?

A. They must be kept in places provided for the purpose; none should be allowed to stand about, either empty or with water or soaking clothes in them. Buckets found out of place will be turned over to the master-at-arms.

Q. What about the necessity for men to sleep where billeted?

A. Men must sleep on their assigned billets, unless, in warm weather, they receive special permission from the executive officer to sleep on the main-deck.

Q. What about bringing birds or animals on board ship as pets?

A. It may be done only with the permission of the executive officer.

Q. When does the meal hour begin?

A. When the meal is piped, and not at mess gear. Men must keep clear of the decks and the mess tables until "pipe down."

Note.—Whistling is Never Permitted on Board Ship.

PART ONE

"I"

THE AIM AND OBJECT OF ALL GENERAL DRILLS

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Q. What are GENERAL DRILLS?

A. They are "all hands" emergency drills; everyone has a station, and no one is excused from drills of this character. The general drills are: Collision Drill, Fire Drill, Abandon Ship and General Quarters. Although it is an emergency drill, the Fire and Rescue Party does not call for the services of all hands.

Q. What are WATCH, QUARTER, STATION, FIRE, COALING, and BOAT BILLS?

A. The executive officer prepares complete watch, quarter, station, fire, coaling, collision, berthing, and boat bills, and has them framed and posted on the crew's bulletin boards. Anyone, by consulting these bills, can obtain complete information in regard to his duties at general drills.

Q. What is a STATION BILLET?

A. A station billet is prepared for each member of the crew. It assigns him his rating, watch number, part of the ship, mess, boat, and station at quarters and at fire quarters. These billets are given out as soon as men come on board.

Q. What is your FIRST DUTY upon the receipt of your station billet?

A. Learn your watch number; then, by consulting the various bills that are posted on the crew's bulletin boards, find your station and make sure you understand all your duties at Collision and Fire Drills, Abandon Ship and General Quarters. Also find out whether you are a member of the Fire and Rescue Party; and if so, learn your duties.

Q. In case you do not understand the instructions given in these emergency bills, how do you find out what your duties are?

A. Go at once to your division officer and ask him to explain your duties.

Q. What is the SIGNAL for COLLISION, or for collision drill?

A. ONE long blast of the SIREN, and the ringing of the general alarm gongs. This signal is a peremptory order for every officer and man to go to his assigned station *on the double;* and for every watertight door, hatch, and air port on the ship to be closed and dogged as quickly as possible; also, for preparing

the collision mat for going over the side. In effecting this object, every man on board ship has a station; and in order for the entire ship to be made secure in case of collision, every man must carry out his assigned duty quickly and thoroughly.

Q. What is the general scheme for CLOSING WATERTIGHT DOORS in case of a collision, or at collision drill?

A. As a rule, all watertight doors and hatches leading into and below the protective-deck—with certain exceptions noted on the collision bill—are kept closed at all times, except when they are actually in use. The purpose of this scheme is to insure watertightness of the ship below the waterline practically at all times. Manholes to double bottoms, wiring and wing passages, and steam-pipe passages are kept closed at all times when the compartment is not being overhauled; and they are always secured after working hours. The closing of all other watertight doors and hatches, whenever the signal for collision sounds, is usually arranged for by the designation of certain men for the closing of certain groups of doors. The parties close and dog all doors and hatches, beginning with the lowest unclosed compartment, and working upward; they must be particularly careful to see that all manholes, hatches, and scuttles to lower storerooms are closed. *Men assigned to these parties must realize that it is also a part of their duty to report any damage to dogs, or to any watertight fixture, and whether gaskets are clean, free from paint, and in good condition.* Upon completion of their duty, the senior men of the parties report to the petty officers of the respective parts of the ship, who, in turn, report to the various division officers.

Q. What PRECAUTIONS are taken to see that all persons below decks have come up from below, previous to the closing of exterior outlets?

A. The route of escape of each party assigned to the closing of doors, air ports, and hatches is given in the collision bill. Petty officers are usually stationed at the escape doors and hatches, and they are required to be familiar with the personnel of the parties using such doors and hatches as escapes, and they must take particular care to avoid shutting anyone up in distant compartments, paying particular attention to avoid shutting in the air port closing details.

Q. What is the correct way to open and close watertight doors, hatches, and air ports?

A. When opening, loosen the dogs or bolts nearest the hinges first: this prevents the door from springing, and makes it much easier to get the remaining dogs up or down,

as the case may be. If the door is in good condition, it is not necessary to put the dogs down as hard as you can; and *dogs should never be driven down.* Then tighten the dogs evenly all around, and go over them two or three times, setting up a little on one after the other successively until all are firm; this will give the door an even bearing all around. These instructions should be strictly adhered to in closing air ports, because an uneven strain on the frame of the port will often crack the lens if the ship is in a seaway, or the port is struck by a heavy sea.

Q. What is a COLLISION MAT?

A. It is a large thrum mat, made of very heavy canvas, thrummed on one side only. It is fitted with hogging lines or chains on each corner. By dropping the chains or lines down over the ram, and thus having two on each side of the ship, they can be manned, and the mat (thrumming to the hull) hauled down over a hole in the bottom. The inrush of water will force the mat against the side, stopping, or relieving the leak. If a regular mat is not provided, an old sail, awning, or other old piece of canvas will answer fairly well.

Q. What is a LEAK STOPPER?

A. A patent stopper made of cellulose that is designed to be inserted from inboard into a shot hole near the waterline; it then expands and prevents the water from entering.

Q. In case of collision at night, what is done with all HAMMOCKS THAT INTERFERE WITH THE CLOSING OF DOORS, or that are otherwise in the way?

A. Take one turn of lashing around hammock, and stow it clear.

Q. What is the SIGNAL TO SECURE after collision quarters?

A. THREE SHORT BLASTS OF THE SIREN, followed by the call "Secure" on the bugle.

Q. What is done at secure?

A. Open watertight doors and hatches, and all air ports that are ordinarily left open.

Q. What are you required to do after you have carried out your orders and reported to the petty officer in charge of your part of the ship, in obedience to the call, "Secure"?

A. *Fall in at your quarters and keep quiet.* Men remain at their quarters until dismissed by their division officer.

Q. Does this apply to securing from all other drills as well as from collision quarters?

A. Yes.

Q. What about COLLISION IN ACTION?

A. The siren shall not be sounded. Doors and hatches in immediate vicinity of point of collision shall be closed; all other hatches and doors except those required to be left open in battle will be closed. The solenoid whistle is usually sounded as a signal. During a main action, this work is to be performed by the powder division and the secondary battery crews in reserve; during an action with the secondary battery, the powder division and the turret crews will perform this work.

Q. What are the regulations regarding FIRE QUARTERS?

A. The crew shall be drilled at their fire quarters at least once a week, the alarm being frequently sounded at night.

Q. What is your duty in case you discover a fire on board ship?

A. Immediately endeavor to extinguish or control it with the means at hand—available water, hand-grenades, by closing doors and ventilating ducts, etc. At the same time, quietly send word to the officer of the deck, stating the location and the extent of the fire, so far as you know. The officer of the deck will see that the alarm to fire quarters is sounded immediately.

Q. What is the SIGNAL FOR FIRE QUARTERS?

A. The ringing of the general alarm gongs, the "Fire call" on the bugle, and the rapid ringing of the ship's bell. The number of strokes of the bell, immediately following the rapid ringing of the bell, indicates the location of the fire; detailed instructions as to the limits covered by the various numbers of strokes of the bell are given in the fire bill.

Q. What, in general, are the methods of fighting fire on board ship?

A. In general, fire is fought by drowning it with water, by isolating it, and by preventing drafts, thus smothering it.

Q. What general duties are performed within the limits of each division?

A. Couple on and lead out hose from fire plugs as specified in station bill, connecting sufficient hose lengths to lead to the fire. Close and batten down all hatches not required for use. Turn ventilators from the wind, and haul up wind sails. Close all watertight doors and valves in air ducts required for isolating the fire, and to reduce the draft. Leave open such as are necessary for fighting the fire. Rig and man all hand pumps. Stop all blowers. Remove inflammable oils and liquids in the limits of the division to a safe distance from the fire.

Q. What is done with hose that cannot be led to the scene of the fire by connecting it up to its own plug?

A. Such hose is used to lengthen sections nearer the fire.

Q. What is your first duty when you hear the signal for fire quarters?

A. Go to your station quietly, *and at double time.* Carry out the particular duty assigned you, then, if possible, help in carrying out the general duties of your division in fighting the fire.

Q. What are your duties if detailed as a SMOTHERER?

A. Get two hammocks, and go to the scene of the fire, unless the fire bill directs you first to report to some officer, or petty officer, designated therein.

Q. What are your duties if detailed as a HAND-GRENADE MAN?

A. Get two hand-grenades, and go to the scene of the fire, unless the fire bill directs you first to report to some officer, or petty officer, therein designated.

Q. Where do you obtain hand-grenades?

A. Hand-grenades are stowed in racks located in all compartments, passages, and handling rooms, except the engine and firerooms.

Q. What about fighting fire at general quarters, or in action?

A. Under such circumstances fire is fought by the division officer and the men immediately at the scene of the fire. In this case the fire alarm is not sounded. As far as practicable, gun crews in reserve fight the fire.

Q. Will water extinguish an oil fire?

A. No; dry sand, steam, or chemical extinguishers must be used.

Q. In case of fire at night, what is done with the hammocks of men who are berthed amidships?

A. Men berthed amidships take one turn of their lashing around their hammocks, and hang them outboard with both clew-rings on one hook.

Q. What is the signal to secure from fire quarters?

A. The sounding of the call "Secure" on the bugle.

Q. What is done at SECURE?

A. Hatches and doors previously closed are opened by the parties that closed them. The fire pumps are stopped, the blowers started, and all fire hose uncoupled, drained, and secured.

Q. In case you find a spanner wrench, or a hose nozzle, missing at the plug to which you are attached, what are you required to do?

A. Immediately after securing from drill, make a special report of such missing spanner or nozzle to your division

officer. *Taking hose, hose nozzles, or spanners, or watertight door or hatch wrenches, or pipe wrenches, or other implements of this nature from their places, for any but their intended use, is forbidden.*

Q. What are you required to do after you have carried out your orders in regard to securing?

A. Report to the petty officer in charge of your part of the ship that your fire plug, watertight door, hand-grenade, as the case may be, is secure. The petty officer reports to the division officer who, in turn, reports to the executive officer. As the reports of the various divisions are usually timed, you may readily see how you may reflect credit on your division by carrying out your duty properly and making your individual report of "secure" as promptly as possible. After you have reported, fall in at your quarters, and keep quiet.

Q. What is done with the fire hose before securing them on their racks?

A. One end is put in the water-way, and the hose is "underrun" by two or three men, in order to drain it thoroughly before it is secured on the rack.

Q. What is the SIGNAL for ABANDON SHIP?

A. The ringing of the general alarm gongs, the bugle call for abandon ship, and the boatswain's call, "All hands abandon ship," passed by the boatswain's mates and masters-at-arms.

Q. In abandoning ship, what is done in case the boats of the ship are of an insufficient number to carry the ship's complement at one load?

A. Second crews are formed for the steamers, and for the other boats, if necessary. Certain designated crews make life rafts from coaling booms, lumber, mess tables, gratings, etc.

Q. What EQUIPMENT must be provided for every boat used for abandoning ship?

A. (1) The complete boat equipment, including boat compass, tarpaulin, and medical box.

(2) Rations for one and one-half days in the case of battleships, battle cruisers and armored cruisers, and for three days in the case of all other vessels for every man in the boat. One ration for this purpose is: 1 lb. bread, ¾ lb. meat and ½ gallon of water.* The bread and meat are put up in boxes called emergency ration boxes. Each box contains 10 such rations. The emergency ration boxes are stowed in accessible "abandon-ship lockers," whence they must be broken out and provided at the call to abandon ship.

* On vessels other than battleships, battle cruisers, and armored cruisers this allowance is increased to 1½ gallons per man.

(3) At least two rifles and a supply of ammunition.
(4) Mess gear and iron kettle.
(5) Navigational instruments and tables, if possible. At least one boat must be so equipped.

Q. Where are WATER BREAKERS stowed?

A. On the main-deck, usually near the base of the fire-control mast.

Q. How do you find out what boat you abandon ship in, and what part of the equipment of that boat you provide?

A. As soon as you have reported on board, and have received your station billet, consult the abandon-ship bill. If you do not thoroughly understand your duties therein assigned, ask your division officer.

Q. What are you required to do when you hear the signal for abandon ship?

A. Each man proceeds, *on the double*, to provide his assigned portion of the boat equipment, and to bring it to the part of the ship where his boat fits out. This fitting out station is designated in the abandon-ship bill.

Q. What men are excused from answering the call?

A. For drill, men absolutely necessary in the engineer department remain below. These men will be designated by the engineer officer. When actually abandoning ship, the furnace doors are opened, fires hauled, and bleeders opened before the engine and fireroom forces leave their stations.

Q. What is being done on deck while the men detailed are providing necessary gear and rations?

A. Boats are rigged out, lowered, and taken to their designated fitting-out places by the regular details.

Q. What is done when the boats are fully equipped, provisioned, and manned?

A. The boats then shove off from the ship and form column on their respective sides.

Q. What are your duties if detailed as a member of the "second abandon-ship crew" of any boat?

A. If the abandon-ship bill calls for you to provide certain provisions, or equipment, carry out such orders; then fall in ranks in the part of the ship designated for the fitting-out of your boat, and keep quiet. A sufficient number of men are designated from the "first abandon-ship crew" to bring the boat back to the ship for the second trip; or, if abandoning ship while in company with the fleet, boats will probably be sent from other ships. Any such boats will be used as directed by proper authority. By Navy regulations, the captain is the last

man to leave the ship; consequently, he will always be able to issue the special orders necessary to meet every emergency.

Q. What is the PROVISION CALL?

A. This call is sometimes sounded as a preliminary signal for abandoning ship; it is accompanied by the boatswain's call, "Provision all boats." In view of the possibility of a ship sinking after collision, and the consequent necessity for abandoning ship, the provision call is frequently sounded after the signal to close watertight doors and valves (the single long blast of the siren). In obedience to the provision call, all men who are detailed to supply provisions for abandon ship provide such provisions, if their presence is no longer required at their stations for closing watertight doors. The provisions having been supplied, men will proceed to make all other necessary preparations for abandoning ship. The provision call may, therefore, be considered as a preliminary signal for abandoning ship, and while a number of men may be occupied below in the attempt to save the ship, bracing up bulkheads, gettting out collision mats, etc., no man not otherwise specially engaged should cease his work in preparing his boat, until every preparation short of lowering the boat has been made.

Q. What is done to prevent confusion in the stowage of equipment in the various boats at abandon ship?

A. The particular station of each man in a boat at abandon ship is determined by the boat officer, and the men are carefully drilled to take their stations quickly, quietly, and without crowding or confusion. The position of each article of equipment is carefully specified, and men stationed to stow articles are thoroughly instructed with regard to the stowage plan, according to a sketch of the boat clearly showing the position of water breakers, boat boxes, emergency rations, etc. To avoid confusion of the personnel and slovenly stowage of the equipment, careful attention must be paid to the observation of these instructions.

Q. What is the least freeboard permissible for all boats (except dinghies) when fully manned and equipped?

A. Twelve inches' freeboard; dinghies must have ten inches.

Q. What is the signal to SECURE from abandon ship drill?

A. The bugle call, "Secure."

Q. What is done at secure?

A. Boat crews secure their boats, return supplies, and fall in abreast places assigned for equipping. Boat officers report when all is secure; and the efficiency of each boat, judged from the thoroughness and expedition with which it is se-

cured depends upon the efficiency of each individual detailed for the crew.

Q. What is the signal for GENERAL QUARTERS?

A. The ringing of the general alarm gongs, and the call "General Quarters" sounded on the bugle.

Q. How often is the crew exercised at general quarters?

A. At least once a week; exercises are often held at night general quarters.

Q. What is the object of drilling the crew at general quarters?

A. To make sure that the ship is in all respects ready for battle. Since a ship's principal duty is to fight with her guns, general quarters is the most important drill that is held.

Q. What, in general, is done at this drill?

A. At each exercise at general quarters, every preparation and disposition that would be made in battle is carried out, except that the ship is not always cleared for action. Officers and men have the exact stations they would occupy, perform the same duties, and use the same systems of communication, fire-control, range-finding, etc., that would be employed in battle.

Q. What various conditions of battle are simulated at different exercises at general quarters?

A. On different occasions, the ship may be supposed to be at anchor, or under way, repulsing a torpedo-boat attack, fighting another similar, or a distinctly different type of ship, engaged in a fleet action, or repulsing several vessels attacking her at once. In other words, the exercise should be used to develop the efficiency of the ship as a fighting unit, and so to train the crew that, so far as information on the subject is available, a battle would simply be a repetition of this drill, with the exception of the actual firing of the guns. The drill very often assumes that catastrophes have occurred due to the enemy's gun-fire, the remainder of the drill being carried out with the means supposed to be available, as would be the case in battle.

Q. Is anyone on board ship excused from general quarters?

A. Every man on board ship has a station for general quarters; and when the call sounds, or the general alarms ring, he must go to that station *on the double*.

Q. What is the object of the FIRE AND RESCUE PARTY?

A. (1) To assist a vessel on fire. (2) To rescue people from her, or from any shipwrecked vessel. (3) To prevent the spread of flames to shipping that may be endangered. (4) To render similar assistance to property endangered on shore.

Q. Has everyone on board ship a station in the fire and rescue party?

A. No; the organization of the party is limited to the number of men necessary to carry out its duties in a proper and efficient manner. Look up the stations assigned for the fire and rescue party—the bill is posted on the ship's bulletin board; if you are detailed in the party, make sure that you thoroughly understand your duties, and obey the call.

Q. What is the signal for the fire and rescue party?

A. In the daytime the call is "Away fire and rescue party," piped by the boatswain and the boatswain's mates. At night the general alarm may be sounded previous to passing the word.

Q. What is done in case of an emergency where the regular fire and rescue party is too small to meet the requirements?

A. Additional boats may be detailed for duty, or the call "Away all boats" may be sounded.

Q. When is a ship CLEARED FOR ACTION?

A. When war is declared, ships land at navy yards, all loose and inflammable articles and furnishings, including the chests, spars, boats, etc., which can be spared. For drill, articles that would otherwise be put on shore are labelled "Overboard." Articles which are so essential to a ship that they cannot be left on shore, such as are required in daily use and would be valuable after battle, will not be labelled "Overboard," and must be so disposed as to provide against fire and splinters and insure an uninterrupted service of the battery. During the time when hostilities are imminent, ships will at all times be cleared for action, so far as practicable.

Q. What about the time element in clearing ship for action?

A. It is second in importance only to thoroughness in preparing for battle; and if all preparations have been made, the time required for the evolution is a measure of the smartness and efficiency of the crew. First the crew will work for thoroughness, then to reduce time.

Q. What is the signal for clearing ship for action?

A. The boatswain's call, "All hands clear ship for action." Everyone on board ship has certain duties to perform in obedience to this call. All work is performed under the supervision of the division officers, divisions, as a rule, working within the limits assigned them for cleaning.

Q. How do you find out what your duties are at clear ship for action?

A. Ask your division officer. He has a detail bill for duties within the limits of his division. You should not have to ask

the nature of your duties more than once. When you have been told, make a note of what you are supposed to do.

Q. Is clearing ship for action a drill?

A. No; it is regarded as an evolution.

Q. What are REPAIR STATIONS?

A. Designated places about the ship where electricians, carpenters, blacksmiths, armorers, and others equipped with tools and materials necessary to make repairs may be at once available if required during battle.

Q. What are RELIEF STATIONS?

A. Relief stations are established at various protected points about the ship, in the neighborhood of, and accessible to, the men who are most exposed in battle. These stations are manned by men of the surgeon's division who have been carefully trained in the application of first-aid in the case of shell wounds.

Q. Why is COALING SHIP regarded as a DRILL?

A. Because, in time of war, coaling is absolutely necessary, and time is most valuable. For that reason, every effort must be made in time of peace to increase the efficiency of a crew of a man-of-war in this respect.

Q. How prepare for coaling?

A. The stations and the duties are different for each ship, but they are clearly laid down in the coaling bill. As a general rule, each division works in its own part of the ship, gets up coaling screens, rigs canvas over the side, gets up baskets and shovels and rigs booms, guys, etc. Engineers usually rig portable chutes below, and handle the coal after it is in the chute.

Q. How is coaling conducted?

A. Men are stationed on the decks and in the lighters. Everything depends on the method adopted. Baskets, bags, or buckets are used. Men must all work diligently. Petty officers supervise and expedite work; they direct and show others how to work, and station them properly. No officer or man can leave the ship, except on duty, during coaling. Each division should strive to make a new record for itself at each coaling. During the coaling, do not lose all interest in the ship. Everything will get dirty, but if paint is worn off by the foul lead of a whip, or by the dragging of a bag over the rail, it shows lack of care. Every man in the division should take pride in keeping the ship in good condition.

Q. What information is usually posted on the crew's BULLETIN BOARDS in addition to the various station bills?

A. The "Articles for the Government of the Navy"; the daily routine; daily conduct reports; all police regulations; routine orders concerning the ship's company; information concerning the movements of the ship; the mails; the address for letters; conduct classes and records; quarterly recommendations; standing restriction lists; results of competitive drills, and other information of like nature interesting to the crew and proper for them to know.

PART ONE

"J"

REGULATIONS IN REGARD TO UNIFORM AND CLOTHING

PART ONE.

"J."

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Q. What articles of clothing is an enlisted man required to have?

A. The *minimum* outfit of clothing for an enlisted man of the Navy is as given in the following table; but it should be noted that there is nothing to prevent men from having *more* than the required allowance. The outfit of heavy clothing may be reduced in the Philippine Squadron, at the discretion of the squadron commander. The table applies to all enlisted men except chief petty officers and bandsmen:

1 suit blue dress.	2 white hats.
1 suit white dress.	1 neckerchief.
2 blue undress jumpers.	1 overcoat.
1 pair blue undress trousers.	1 jersey.
3 suits white undress.	2 towels.
2 suits underclothes (heavy).	† 1 pair rubber boots.
2 suits underclothes (light).	1 pair gymnasium shoes.
* 2 pairs shoes.	1 shoe brush and blacking.
4 pairs socks.	† 1 jacknife.
1 mattress and 2 covers.	1 pair gloves.
1 pair blankets.	‡ 1 pair leggings.
1 blue cap, complete.	1 watch cap.

Officers' mess attendants must have 4 white jackets in addition to the above.

All petty officers must be provided with rating badges.

Men of the Navy Hospital Corps are entitled to an initial gratuitous issue of clothing, when ordered to expeditionary service, to consist of the following articles: 1 field hat, 2 flannel shirts, 2 pairs field trousers, 1 web belt, 1 pair russet shoes, 1 pair leggings.

Q. How do men obtain this outfit of clothing?

A. All enlisted men of the Navy receive, on first enlistment, the necessary outfit; there is no charge for this original outfit.

Q. How is the outfit of clothing kept up to the standard requirements?

A. Whenever necessary, the division officer causes memorandum requisitions for clothing and small stores to be prepared and signed by the men. When a man draws clothing or

* At least one pair to be high shoes.
† For seaman branch only.
‡ Except officers stewards, officers' cooks, and officers' mess attendants.

small stores, he signs a receipt for them; one copy of this receipt he retains, the other copy going to the paymaster. The division officer requires all men drawing clothing or small stores to show him the articles drawn together with the receipt.

Q. What is done with the clothing as soon as it is drawn?

A. After it has been tried on, it should be *marked immediately* with regulation stencil and paint. The manner of marking the various articles of clothing is clearly stated; it must be followed strictly. Very often men neglect to mark their underclothing until called to account by their division officer. *Unless clothing is marked, it is bound to be lost; in that event you will have to draw more and your pay account will suffer accordingly.*

Q. What are the regulations for marking clothes?

A. The following rules are quoted from the uniform regulations issued by the Navy Department.

Every article of clothing shall be legibly marked with the owner's name using black paint in marking white clothes, and white on blue clothes, as follows:

Blankets.—All the right-hand corners, 4 inches from each edge.

Cloth cap.—Inside crown.

Drawers.—On the outside of the right half waistband.

Dungaree trousers.—Same as blue trousers.

Flannel shirts.—Same as blue jumpers.

Jerseys.—Same as undershirt.

Jumpers.—Blue, on the inside, on the hem, across the center line of the front, and to the right of the center line of the back; white, inside, across the back, just below the collar seam and close to it, to the right of the center line; dungaree, same as white.

Leggings.—Inside on centerpiece, lengthwise.

Mattress.—In center, 4 inches from each end.

Mattress cover.—Right corners, 4 inches from open end.

Neckerchief.—In center.

Overcoat.—On lining, each side of split of tail, 3 inches from and parallel to bottom.

Overshirts.—On the outside of front and on the inside of back, both marks being placed 1 inch from the bottom of the shirt, the former across the center line; also on the underside of the collar.

Pajamas.—Same as blue jumpers and blue trousers.

Rain clothes.—Same as dungarees. Particular care should be taken that rain clothes should be kept distinctly marked at all times.

Rubber boots.—Inside, near the top.
Shoes.—Inside, near the top.
Socks.—On leg, near top.
Trousers.—Blue, on the inside of the back of both legs close to the bottom hem; white, on the waistband on the inside in front and on the underside of the pocket flap.
Undershirts.—On the outside of the front, 1 inch from the bottom of the shirt and to the right of the center.
Watch cap.—Inside, ½ inch from the bottom.
White hat.—On the sweatband.

NOTE.—Every man is required to have a stencil of his name in order to mark clothes in accordance with these instructions.

Q. If clothes are bought at auction, what must be done in regard to marking them?

A. Deserters' effects are sold at auction. The master-at-arms has a stamp, "D. C.," which he puts over the former owner's name in red paint. The purchaser then marks his name in white or in black paint, white on blue clothes, black on white clothes.

Q. What is meant by UNIFORM?

A. It is the style and make of clothes worn in a military organization.

Q. How is the uniform prescribed on board ship?

A. The senior officer present prescribes the uniform. It is signalled to other ships daily at 7.00 a. m., and whenever it is changed. The word is passed by the boatswain's mates and the master-at-arms; and all hands shift into the uniform of the day during the breakfast hour. The uniform of the day is always posted on the dress boards.

Q. What clothes are men allowed to keep on board ship?

A. Only clothes of uniform pattern are permitted to be kept; no other clothes will be allowed in a man's possession, whether he intends to wear them or merely to keep them.

Q. What is done with clothes that are not regulation?

A. All non-regulation clothing is turned over to the chief master-at-arms and disposed of as directed by the executive officer.

Q. Can men have clothing made, or must they draw it?

A. The making of clothing is allowed, *provided it conforms strictly to uniform regulations.*

Q. Can "ready-made" uniform clothes be obtained on board ship?

A. Yes, upon requisition.

Q. What are the ship's tailors required to do with clothes that they make for the crew?

A. Before the clothes are delivered to the person ordering them, they must be submitted to the division officer for inspection.

Q. What is the regulation in regard to torn or mutilated clothing?

A. Torn clothing must be mended at the first opportunity; it must not be worn until it is mended. MUTILATED CLOTHING IS NON-REGULATION CLOTHING, and, as such, it is liable to confiscation.

Q. What about civilian clothing?

A. Men are not allowed to wear civilian clothing on board ship, nor are they allowed to have it in their possession.

Q. What are the various uniforms for enlisted men?

A. (1) DRESS, blue or white.

(2) UNDRESS, blue or white.

(3) WORKING DRESS, blue or white.

(4) DUNGAREES. (For certain designated men only.)

Q. What garments compose DRESS UNIFORM, and when is it worn?

A. Blue overshirt; blue cloth trousers; blue cap (white hat may be prescribed when officers wear all blue with white caps); neckerchief; black shoes. *Or*, white dress jumper; white dress trousers; white hat; neckerchief; black shoes. Dress uniform is prescribed on occasions of ceremony, for parades and reviews. It is usually ordered on board ship for Saturday inspection. Dress should be the very best uniform a man has in his possession; the greatest care should be taken to appear neat at all times, but when the uniform is "dress," every man's appearance should be perfect, and there should not be the slightest chance for criticism in regard to any detail of the uniform. The more efficient the division, the smarter and neater appearance it invariably puts up at inspection. Dress is also the uniform for liberty and leave.

Q. What garments compose UNDRESS UNIFORM, and when is it worn?

A. Blue undress jumper; blue cloth or flannel trousers; blue cap (white hat may be prescribed when officers are in blue with white cap); black shoes, when not barefoot. *Or*, white undress jumper, white undress trousers; white hat; black shoes, when not barefoot. Undress uniform is worn on ordinary occasions, either on or off duty. Undress uniform without jumpers is sometimes prescribed when weather conditions warrant it.

Q. WITH WHAT UNIFORMS DO YOU WEAR A NECKERCHIEF?

A. Always with dress uniform, white or blue. Boatswain's

mates, quartermasters, guard petty officers, and other petty officers on watch, buglers, messengers, sideboys, sentries, men on guard or patrol detail, and coxswains of all boats shall *always* wear the neckerchief with undress, blue or white; but other men shall not wear neckerchiefs with undress, blue or white, except on occasions when prescribed. Bodies of men under arms, including their petty officers, shall not wear the neckerchief with undress, except the guard.

Q. What garments compose WORKING DRESS, and on what occasions is it worn?

A. Same as undress, with white hat or watch cap; or working dress may be prescribed without jumpers, or with flannel shirts instead of jumpers, or under the jumpers. Working dress is worn, when prescribed, at battery drills, and by details of men or individuals engaged in work for which this dress is necessary.

Q. What are the instructions regarding DUNGAREES?

A. The uniform must be *complete.* Dungaree jumper; dungaree trousers; blue cap, white hat, or watch cap; black shoes, unless barefoot.

Q. What men are permitted to wear dungarees, and on what occasions may they wear them?

A. Dungarees may be worn on cruising vessels:

(1) By the engineer and dynamo-room force *while on duty.*

(2) By gunner's mates, turret captains, electricians, mechanics, and men regularly detailed as helpers or strikers in turrets, or in the care of machinery below decks, instead of white working dress, *while they are actually employed at work that would damage the white uniform.*

(3) By the engineer crews of steamers and power boats.

Q. Are even these men permitted to wear dungarees at mess?

A. Only if they are members of the engineer or dynamo force about to go on watch, or if they are members of the engineer crews of steamers, *and then only when the dungarees are clean.* The crews of submarine vessels may wear dungaree suits when on duty on board the submarines, *but the crews of other torpedo vessels shall conform to the regulations for other types of vessels concerning wearing dungarees.*

Q. In addition to the men specified above, are any other men allowed to wear dungarees, or to have them in their possession?

A. *Dungarees shall not be worn nor had in possession by men other than those specified.*

Q. What is the UNIFORM FOR MESSMEN?

A. White undress, when performing the actual duties of messmen. They may wear this uniform any time *below decks*. At quarters and drills they wear the uniform of the day.

Q. What is the UNIFORM FOR THE CREWS OF RUNNING BOATS?

A. The uniform of the day, with waterproof clothing, of regulation pattern, in bad weather; and in cold weather the men will have their overcoats at hand. Rubber boots shall never be worn by the boat's crew. Shoes may, or may not, be worn; but under all circumstances uniformity shall prevail, that is, *every member* of the boat's crew must wear shoes, or leave them off, as the order may have been.

Q. What laxities in the uniform of enlisted men are some times seen?

A. (1) The omission of overshirts and neckerchiefs (at times when such omission is not prescribed).

(2) Torn clothing.

(3) Trousers tucked in boots.

(4) Mixed uniforms.

(5) Non-uniform flat hats.

Q. What steps are taken to remedy such carelessness?

A. If the clothing is non-regulation, it is confiscated. Other laxities in the matter of uniform acquire for the offender a reprimand from the officer of the deck, a reputation for slovenliness, and, in the case of chronic offenders, severe punishment.

Q. What is morning inspection?

A. It is the inspection at 9.15 every morning by the division officer. He sees that all men of the division are in the exact uniform of the day, that they are cleanly shaved, that their hair is properly cut, that their shoes are shined, and that they are neat in every respect.

Q. How does an enlisted man STOW his CLOTHES on board ship?

A. Each man has a canvas BAG for his clothing, and a DITTY BOX for his trinkets, photographs, writing material, toilet articles, etc. Rain clothes are stowed in lockers set aside for this purpose. Some men very improperly stow a part of their clothes and other articles in their hammocks. This practice should not be permitted; only mattresses and blankets belong in the hammocks.

Q. How are bags marked and stowed?

A. They are marked on the side, 18 inches from the bottom, with the watch number of the man to whom they are issued. They are hung to bag rails on deck, under the

charge of the master-at-arms, and *they cannot be opened except at special hours* without permission from the officer of the deck who will send word to the master-at-arms whenever he gives such permission. Clothes must be plainly marked, provided with stops, and kept in the bags at all times.

Q. What are the instructions in regard to removing shoes when the decks are wet down, or are being scrubbed?

A. Always remove shoes when scrubbing decks; in case of severely cold weather, rubber boots should be worn.

Q. What is the regulation in regard to the sale or exchange of clothing?

A. (1) "The clothes, arms, military outfits, and accouterments furnished by the United States to any enlisted person in the Navy or Marine Corps, or required by such persons as a part of their prescribed uniforms or outfits, shall not be sold, bartered, exchanged, pledged, loaned, or given away, except by competent authority therefor."

(2) It should be noted that this article absolutely forbids any exchange of clothing whatever, without competent authority, and the man who buys or accepts clothing belonging to another is equally guilty—provided he does not have permission from proper authority—with the man who disposes of the same. If for any proper reason men desire to exchange clothing, they must apply to their division officer who will refer the request to the executive officer, provided he considers the exchange is justified.

(3) The possession of another man's clothing—unless it has been obtained by competent authority for exchange, or at an auction sale of deserter's effects—is unlawful.

(4) Men should remember that this regulation is made for their own protection against the occasional dishonest man who steals clothing; if exchange is permitted without special authority, there is no way to check the dishonest man.

Q. HOW ARE CLOTHES FOLDED?

A. Turn all clothes, except overcoats and underclothes, inside out before folding; brush clean, roll up tightly, smoothing out all the wrinkles, and secure with a white cotton stop about 2 inches from each end of the roll. The stops are tied in a square knot and the ends tucked inside the roll. The name must show plainly lengthwise of the top of each roll.

Fold clothes as follows:

All trousers.—Fold one leg over the other so that the seams on the inside of the legs come together. Turn waistband back to the middle of the leg, tuck in seat and roll toward the bottom of the leg.

Drawers.—Same as trousers, except roll from the bottom of the leg upwards.

Overshirts and white jumpers.—Place one sleeve directly over the other, the front of the shirt being on the inside of the fold and the collar extending above the neck with the two side edges together on inside of the collar. Fold collar lengthwise of shirt. Fold arms back over collar twice, and roll back from neck toward lower edge of the shirt.

Undershirts.—Same as overshirts, except directions concerning collars.

Overcoats.—Lay the overcoat out flat, outside up, sleeves along side, collar turned down as when worn. Fold back each half of the front over the sleeve nearest it, and then fold one-half of the coat over the other half. Fold upper third of coat over the center third, and lower third back over upper third. Secure with a long stop around the center.

Q. When clothing is taken out to be worn, what should be done with the stops?

A. They should be placed in the ditty box.

Q. When clothing is to be washed, what is done with the stops?

A. They are rove through the eyelet-holes before the clothes are wet, and used to stop the clothes on the line. Rope yarns will not be allowed in the bags or on the lines. If the clothes stops are lost, new ones must be made from canvas threads.

Q. How Stow Clothes Bags?

A. (1) Clothes are to be kept in white canvas bags, the rolls being stowed in layers of three pieces, each layer at right angles to the one below it.

(2) Put blue clothes and caps in the bottom of the bag, white clothes and hats next, small bags, and other small articles on top.

(3) Secure the bag with two turns of the lanyard as close down on top of the contents as possible. Keep overcoats in divisional coat bags, or stowed in the bottom of clothes bag, as may be ordered.

(4) Men must be careful to keep their bags clean at all times. They will save themselves much labor by so doing. Never drag a bag along the deck, or put it down except in a clean, dry place.

(5) When bags are scrubbed, be sure to get them perfectly clean and wash all the soap out of them. If you fail to do this you will be required to rescrub until you get your bag clean.

Q. What is Bag Inspection?

A. It is an inspection of the bags of the division by the petty officers, supervised by the officers, for cleanliness, tidiness.

Plate I
Bag Inspection.

quantity, and condition of clothes. At the first bag inspection every piece should be inspected for marking; after that, inspect to see that the marks do not need renewing, that new clothes are properly marked, etc.

Q. How is bag inspection conducted?

A. (1) Bags are to be kept ready for inspection at all times.

(2) The division will go to the berth-deck, take up bags, fall in again for inspection, and open ranks. Men will stand at attention, behind their bags, until they receive the command, "Lay out bags for inspection," when the clothes will be taken out of the bags and placed in two piles, blue in one and white in the other. Lay the bag on deck, the number on the bottom, toward the inspecting officer, and showing. Place the clothes on the bag in a single layer of two rows, names on top, *blue clothes forward and white aft.*

(3) Division officers will see that the inventory of clothes belonging to each man is kept up to date, and, at inspection, that nothing has been disposed of without permission, and that there is no extra article in his possession that cannot be satisfactorily accounted for.

(4) Arrange clothes in the following order, commencing at the bottom of the bag, the outer ends of pieces being in the same straight line:

BLUE CLOTHES.—Trousers, overshirt, flannel shirt, jersey, overcoat, flat hats, watch caps, socks, and leggings.

WHITE CLOTHES.—Trousers, jumpers, mattress covers, undershirts, drawers, pajamas, towels, hats, socks, and small bags. Place rubber boots on the right, with toes even with the bottom of bag, shoes in rear of boots. The whiskbroom is placed between the two rows of clothing, and stood on end between the white and the blue trousers.

(5) The first command is followed, five minutes later, by the command "Attention." Men then stand at attention at the open ends of their bags, facing the inspecting officer, and preserve silence.

(6) All clothing must conform to the uniform regulations and must be worn in a regulation manner; all men must wear underclothes, socks, and good shoes; shift and scrub underclothes at least twice a week, and mattress covers weekly. They must come to quarters in clean uniform and with their shoes shined. Men must always be in the prescribed uniform, not only at quarters, but at all times. They must always keep their clothes in repair.

Q. Why should there be no variation from the method above described for laying out bags for inspection?

A. Because this is the system adopted by the regulations at training stations. It is therefore the method to which men are first trained, and it is most undesirable to introduce any innovations.

Q. What should a petty officer of the division be detailed to provide at bag inspection?

A. There should be a "Division marking kit," with white and black paint and stencil brushes.

Q. What, in general, are the instructions regarding the inspection of clothing?

A. "(1) Commanding officers of divisions shall, in addition to carrying out the instructions already laid down for inspection, take special care that all outer and under clothing, overcoats, caps, hats, and bedding of the men are, in respect to quality, pattern, and color, in accordance with the prescribed uniform.

"(2) They shall see that all materials drawn are used for the purpose required; that all clothing is neatly marked, and kept in order, and that none of it is sold; that the men are neat in person and clothing, and provided with regulation knives; and that underclothing is worn at all times. All work done by the ship's tailor shall be submitted to the division officer concerned for inspection, and approved before it is accepted or any payment made therefor."

Q. HOW ARE CLOTHES STOPPED ON THE LINE?

A. They should be secured to the clothes lines by stops made fast to the eyelet holes in each piece of clothes. These stops should be made of cod-line neatly whipped, or of fine canvas threads, neatly twisted, waxed, and whipped. If two lines are used, all blue clothes must be on one line, and all white clothes on the other. If one line only is used, all the white will be together above, and the blue together below. Clothes should be stopped on with corners lapping over so they cannot slip down and leave "holidays" (vacant spaces) along the line. When stopping on blankets and mattress covers, hitch the clothes stops to the upper corners.

Q. What are the instructions for stopping bags and hammocks on the line?

A. (1) Hammocks must be stopped to the line with three clothes stops, one in each end and one in the center eyelet hole. Take round turn about line with stops, and tie a square knot.

(2) The stops for bags should be made fast to the bottom on the inside, either sewed on securely, or, preferably, passed through two eyelet holes in the bottom. The bag should be turned inside out before stopping on. It is most important to

use strong stops with bags and hammocks and to pass them very securely to prevent them from being blown off in bad weather. It is quite inexcusable to lose articles off the line.

Q. How are clothes mended?

A. Each man should have his "Sewing kit." Wednesday afternoon is usually allowed for mending, and it should be so observed and not as a holiday.

Q. WHEN ARE HAMMOCKS SCRUBBED?

A. As called for in the routine; usually twice a month. At evening quarters, hammocks bearing the numbers of men in the division are served out, and the men are ordered to shift hammocks that night and scrub in the morning. Men who will be on watch during the morning watch may obtain permission from the officer of the deck to scrub, that night. Hammocks are shifted, and dirty hammocks thoroughly scrubbed the next morning when the boatswain's mates pipe "Scrub hammocks." As with bags, men should be very careful to keep their hammocks clean at all times, and thus save labor. Never let a hammock touch the deck except at inspection. Sling it neatly, and lash it tautly. Scrub it clean and be sure to get all the soap out of it before stopping it on the line.

Q. How are hammocks dried?

A. They are stopped securely on the lines. With double lines, numbers are up and out. Three stops are placed in the head of the hammock, and each foot corner of the hammock securely stops to the one on each side. Hammocks are large and heavy, so that it is necessary to exercise special care in securing them to the line.

Q. When hammocks are piped down, what is done?

A. Men remove them from the line and look after them until the division is called to quarters. They are then inspected by the division officer, and if satisfactorily scrubbed, are stowed in hammock bags and turned in to the sailmaker's mate.

Q. How are they inspected?

A. The petty officer of the division calls out the numbers in the order desired. The man whose number is called steps forward from the ranks, lays his hammock down and spreads it on the pile. If it is not perfectly clean, the division officer orders it to be rescrubbed. The man takes charge of it, and rescrubs at the first opportunity. It is not necessary to inform your division officer how the hammock came to be soiled. It is not ordered scrubbed as a punishment, but simply to get the hammock clean. Similarly it is unnecessary to call attention to the fact that your hammock happens to be dirty when hammocks are served out.

Q. How are hammocks marked?

A. A number—the watch number of the man to whom it is assigned—is marked on canvas with a stencil, then sewed on the middle of the hammock, about 18 inches from the head. There are two hammocks for each member of the crew, one in use, and one below in the sail room.

Q. What are hammock clews?

A. A collection of small lines called "nettles," secured to a small galvanized ring. The clews are made fast to each end of the hammock, through eyelet holes. The rings go over the hammock hooks, and sling the hammock. A rope lanyard is spliced in one ring to facilitate swinging the hammock between two hooks.

Q. How is a hammock slung?

A. Hook ring of clews to hammock hooks; pass each outer nettle through eyelet, making them equal in length; clove hitch them over their own parts so that the ends point to the center line of the hammock. Take middle nettles to corresponding eyelets so that end of hammock is in a straight line, and does not sag. Secure other nettles to eyelets at proportional lengths. Expend each end in loop through eyelet next to it, so that no end hangs down. When one end is slung, proceed with the other in the same manner.

Q. How are hammock berths marked?

A. The watch number of each man is plainly painted above the hook to which the clew at the head of the hammock is slung.

Q. What functions take place at EVENING HAMMOCKS?

A. (1) Bugler sounds "Hammocks." (2) Every man except those on post, or watch, stands abreast netting about where he thinks his hammock is stowed; then form two ranks facing aft. All hands maintain absolute silence. The chief boatswain's mate reports, "All up and aft." The officer of the deck orders. "Pipe down." Hammock stowers pass out hammocks, calling out the numbers in low tones. After the men on watch have been relieved, and all have had the opportunity to obtain their hammocks, restow the nettings; thereafter hammocks are obtained only by permission from the officer of the deck. Always remember that UNCLAIMED HAMMOCKS MUST NEVER BE THROWN ON THE DECK.

Q. Upon what other occasion is the bugle call, "Hammocks," sounded?

A. BEDDING IS AIRED once a week. The bugle call is sounded; all hands get hammocks, open them up well so that the air can reach every part of the bedding. Let the clews hang down,

and shove the hammock well down under the mattress. Hammocks will be spread out, bedding uppermost, over the upper life lines or the ridge rope or specially rigged hammock lines, one turn of the lashing being taken in order to secure blankets and mattress; and the ends expended. There must be no "holidays" along the rail.

Q. HOW ARE HAMMOCKS LAID OUT FOR INSPECTION?

A. Hammocks are inspected after they have been piped down, subsequent to airing. At the order, "Lay out hammocks for inspection," unlash and spread out the hammock, the name on the mattress being turned toward the inspecting officer. Fold the mattress cover and the blanket twice crosswise, placing the mattress cover 10 inches from the head, and the blankets 10 inches from the foot of the mattress. Throw the clews over the mattress, and coil up the lashing at its head. Five minutes after the command, "Lay out hammocks for inspection," the order, "Attention" will be given. Men stand at attention at the heads of their hammocks until the inspection is over.

Q. Suppose you are going on watch while aired bedding is up, with the chance of your being on watch when it is piped down, how do you obtain permission to get your hammock?

A. About an hour before you go on watch, request permission from the officer of the deck to obtain your hammock.

Q. Must all bedding be of uniform pattern and color?

A. "Bedding shall be aired once a week, each piece being separately shaken out and hung up, arranged along the ridge ropes and rails without intervals. All bedding shall be of the uniform pattern and color; each man shall have two mattress covers and change them frequently; the mattresses shall be picked over, and the tickings washed at least once a year; blankets shall be washed as often as necessary, special facilities, if possible, being given to firemen, mechanics, and others whose bedding requires frequent inspection and much care."

Q. What uniform is permissible while coaling ship?

A. While coaling ship, and cleaning up after coaling, men must be properly and decently clad. While no uniform of the day is prescribed, men must wear whole suits, and not mixed uniforms; and they will wear only articles of uniform.

Q. What are BRANCH MARKS?

A. Stripes of braid, ⅜ of an inch wide, on overshirts and jumpers; these marks are placed on shoulder seam of the sleeve, and extend entirely around the arm. Men of the seaman branch wear this mark on the right arm, and the braid is white on blue clothing, and blue on white clothing. Men of

the artificer branch, engineroom force, wear a similar mark on the left arm, in red for both blue and white clothing. Hospital apprentices, shipwrights, musicians, buglers and commissary and messmen branches wear no branch mark.

Q. What about wearing jewelry with uniform?

A. Watch chains, fobs, pins, etc., shall not be worn exposed upon the uniform.

Q. What are the regulations in regard to WEARING MEDALS?

A. Enlisted men having medals shall wear them with dress uniforms on occasions of ceremony other than parades under arms on shore.

Q. When wear ribbons of medals and badges?

A. Enlisted men entitled to them shall wear ribbons of medals and badges whenever they are in dress uniform, on occasions other than those for which the wearing of medals is prescribed. Medals, badges, or ribbons shall never be worn on the overcoat. The wearing of the following badges is optional with the holders; but if any of them are worn, none of the medals or badges awarded by the government shall be worn at the same time with them: (1) Authorized badges of military societies in the order of date of the wars which they commemorate; (2) badges of the Army and Navy Union of the United States; (3) badges of the Enlisted Men's Abstinence League.

Q. Are KNIFE LANYARDS part of the uniform?

A. No; they do not form part of the uniform, but they may be worn in working dress or at work requiring a knife, either around the neck or the waist, as may be convenient.

Q. What is a SICK-LIST BADGE?

A. A sick-list badge, consisting of an arm band of white cotton, 2 inches wide, shall be issued by the medical officer to each enlisted man on the sick list, to be worn on the right arm above the elbow. The badge is distinctly marked in black block figures with a number, to be entered upon the sick list furnished for the use of the officer of the deck. When a man's name is removed from the sick list, he shall return his badge, neatly washed, to the dispensary.

Q. What are the instructions regarding how the hair and beard must be kept?

A. The hair and the beard shall be kept short. The hair should be cut close in the back and sides and trimmed naturally down the back of the neck. Hair should be left in sufficient length on the top for brushing, but no "forelock" will be permitted. Hair should not be cut square across the neck, nor shall the back of the neck be shaved.

Q. What about WEARING GROMMETS IN FLAT CAPS?

A. Grommets will habitually be worn in flat caps. In going to and fro in open boats, men may be allowed to take out their grommets, especially in windy weather, but all men of the boat's crew shall do the same. WHITE HATS will be worn with the brim turned up.

PART ONE

"K"

FIRST AID

By Medical Director C. F. STOKES, U. S. Navy

PART ONE.

"K."

FIRST AID.

By Medical Director C. F. Stokes, U. S. Navy.

First Aid.

Q. Why should every officer and man know the elements of first aid?

A. (1) Because he can be of greater service to his country if he has this knowledge, and further, he may thus be able to remain at his battle station when otherwise he could not serve.

(2) By properly caring for himself, if wounded, he might thus prevent others from becoming demoralized in battle.

(3) If disabled in battle, by proper care he might sooner be returned to his ship as a fighting effective.

(4) A knowledge of first aid may be, oftentimes, the means of saving life in peace.

(5) After severing his connection with the Navy, there may be occasions when he could be materially helpful in emergencies in civil communities.

Q. What features of first aid should every man know?

A. (1) The application of first aid dressings.

(2) The checking of hemorrhage.

(3) Resuscitation methods.

Q. Describe a first aid dressing.

A. A first aid dressing is simply a bandage long enough to encircle the part, with a compress, or pad, at its middle, the pad to be applied to the wound and the dressing secured by tying its long ends, which encircle the part. These dressings are made surgically clean and are placed in containers for use in case of actual necessity. Dummy dressings are prepared to be used at drills. Such a dressing must be applied, for example, to the arm, the compress or pad so placed as to cover the wound, while the ends of the bandage encircle the arm and are snugly tied; this will keep the dressing in place and end to check the usual hemorrhage that ensues. Each man can be taught to apply these dressings effectively to nearly all parts of his own person, if properly drilled. This being the case, when engaged in battle, a man, if wounded, could

Plate I.

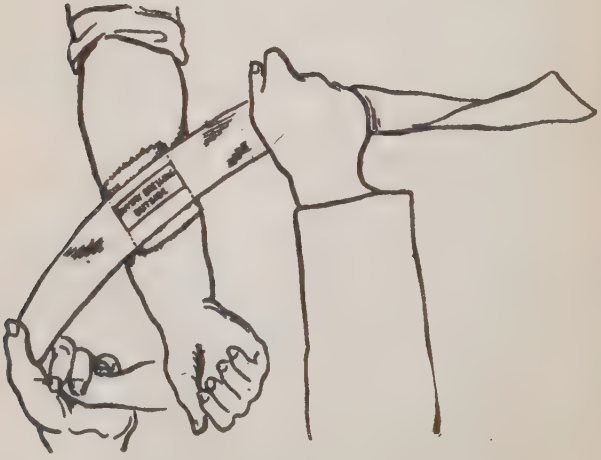


Plate II

step aside, apply his dressing, check hemorrhage, and return immediately to his station without demoralizing others, or requiring assistance from them.

Q. What would you do if you were so wounded that you could not reach the injured part; for example, a wound between your shoulder blades?

A. If your wound was not serious and you felt that, if

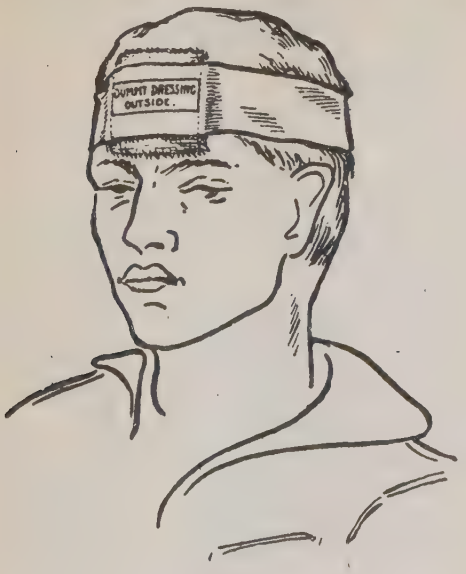


Plate III.

another assisted you, you would be able promptly to return to your station, then you would be justified in seeking such assistance, always bearing in mind that the effective fighting of your gun, for example, is of first importance.

Q. If you were *seriously* wounded what should you do?

A. Make every effort properly to dress your wound. If you are bleeding freely, the blood coming in spurts, carry out the instructions given for checking hemorrhage in this chapter. Keep clear of those engaged in battle, maintaining silence

if possible, otherwise you may demoralize others. Remember that skilled assistance is at hand and that hurried attempts at removal by those not specially trained may do you actual harm. Your greatest safety lies in remaining quietly where you have fallen. If you have sustained a fracture or broken bone, do not attempt to apply splints, but lie still, placing the part as nearly as possible in its natural position; for example, the injured leg alongside the uninjured, or, in the case of an arm, let it lie alongside the body, if possible, remaining perfectly quiet until assistance reaches you after the battle is over.

Q. How should you check hemorrhage if bleeding profusely from a wound?

(Officers and men should study the pulsation of the blood vessels shown in Plate IV in order to become familiar with their location and to determine the amount of pressure necessary to arrest the flow of blood.)

A. (1) The head. Bleeding from the head can generally be stopped by applying the first aid dressing snugly. A knowledge of this can be acquired at drills, when you should apply the dummy dressings, in turn, to the top of the head, the sides, and the forehead; later, to the region of the eye, chin, and other parts of the face. If the hemorrhage is not stopped by the snugly applied dressing, then make firm pressure with the hand or fingers against the bony parts, this applied outside the dressing. Raising the head tends to check the flow. There should be nothing tight about the neck. You can, as a rule, effectively apply these dressings yourself.

(2) The trunk. Bleeding from wounds of the trunk is generally difficult to arrest without assistance, still, there are many situations to which you can apply a dressing without help. You should practise applying dressings to your own body. If the hemorrhage does not cease after a snug dressing has been applied, then make firm pressure on the wound through the dressing.

(3) The arm. Elevate the arm and remove all constrictions between the heart and the wound; cover the wound with a dressing and tie the binders snugly. One end of the binder may be held in the mouth and the other manipulated with the uninjured hand. If the blood spurts in jets, or flows very freely, you may have to apply a tourniquet yourself. The rubber tube tourniquet is supplied. It should be applied between the heart and the wound and should bind sufficiently to check the bleeding. The upper arm is the proper place to apply it. The tourniquet should not remain on over two hours, otherwise the parts beyond it may die.

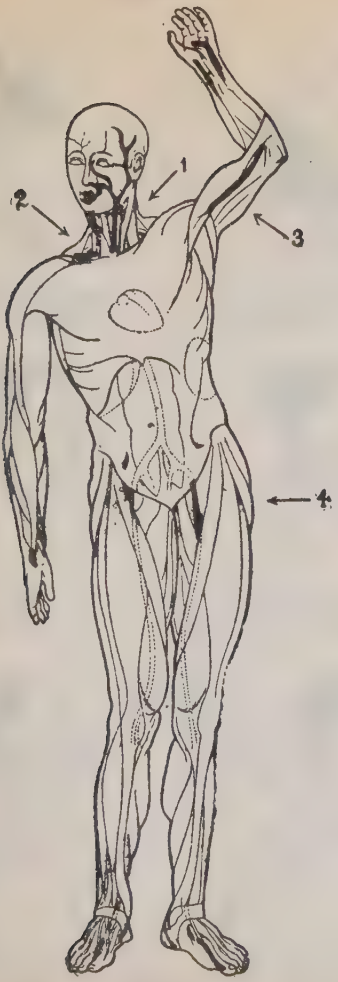


Plate IV.
Diagram showing the position of the important arteries.

Plate V.
Checking hemorrhage by flexion of the elbow.

Plate VI.
Checking hemorrhage by flexion of the knee.

Plate VII.
Compression of the facial artery.

Plate VIII.
Compression of the carotid artery.

Plate IX.
Compression of the subclavian artery with the thumb.

Plate X.
Compression of the brachial artery.

Plate XI.
Compression of the axillary artery.

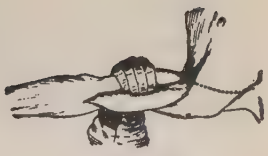


Plate XII.
Compression of the brachial artery.

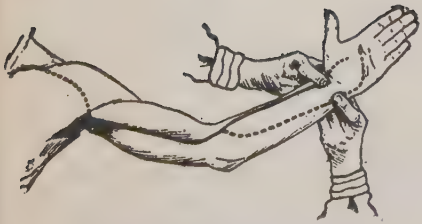


Plate XIII.
Compression of the radial and ulnar arteries.

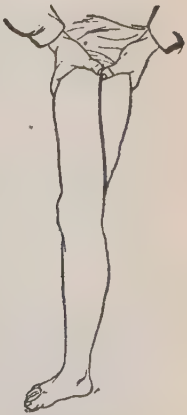


Plate XIV.
Deep pressure with thumbs over main artery of the thigh (femoral artery).

Bleeding from the palm of the hand may be free. Ro dressing into a ball, put it into the palm, grip snugly and s plement the grip by bandaging tightly outside the hand fingers.

(4) The thigh, leg, and foot. As in the case of the ar you should elevate the parts and have all constrictions betwe the heart and the wound removed. This procedure will ge erally check the ooze of a shell wound. You should apply t dressing snugly. When the blood spurts in jets, or flows ve freely, it may be necessary to apply a tourniquet. This is be applied about the thigh. The rubber tourniquet is supplie

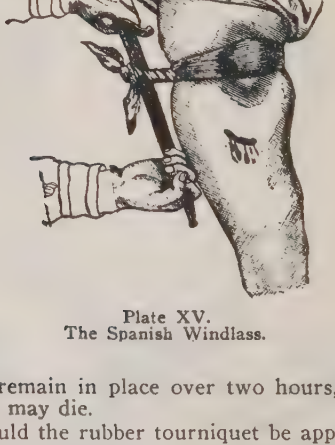


Plate XV.
The Spanish Windlass.

It should not remain in place over two hours, otherwise parts beyond it may die.

Q. How should the rubber tourniquet be applied?

A. Encircle the limb two or three times with the rubber w on the stretch, and secure the ends by tying.

Q. How should the Spanish windlass be applied?

A. This is the best of the improvised tourniquets (PI XV). If possible, put a pad, a smooth, hard object, such a stone or a folded handkerchief, over the blood vessel to compressed. The stick or bayonet can be secured to the li by a band of some sort, to prevent its unwinding.

Q. By what other methods may hemorrhage be checked?

A. There are times when finger pressure over the main blood vessel must be used, and occasions when direct finger pressure to bleeding blood vessel in the wound must be employed. One should use this last method only when necessary to save life, as such a procedure will be likely to infect the wound and cause blood poisoning. Hemorrhage may also be stopped by putting a pad behind the knee and bending the knee sharply on the pad. All circulation in the foot and leg will cease. The same is true of the elbow (Plates V and VI).

Q. Why is it important promptly to apply first aid dressings that are surgically clean?

A. In order to avoid blood poisoning, which is very likely to follow exposure of even small wounds to contact with objects that are not clean, such as hands, neckerchiefs and clothing, in fact, any and all objects that might be hastily applied to them if the danger were not fully appreciated.

Q. What are the consequences in case a wound is poisoned and infected?

A. Simple wounds, if not poisoned, tend to heal promptly and with little or no pain, and thus, oftentimes, are of small account. On the other hand, poisoned wounds are painful, induce fever, prolong healing, and may actually endanger life.

Resuscitation Methods.

Q. Why should you be familiar with resuscitation methods?

A. In order to save the lives of those who have become unconscious through being in the water, seriously shocked by electricity, or lightning stroke, or by breathing poisonous gases.

Q. If a man has fallen overboard, is struggling in the water, and you go to his assistance, what should you do?

A. In approaching drowning persons, swimmers should get their attention and reassure them by calling in a loud voice that assistance is at hand. Approach a drowning person from behind, seize him by the hair if possible, and turn him on his back in front of you, while you yourself assume the same position in the water, keeping both heads a little above the surface by an occasional kick.

Q. What is a so-called death grip?

A. The death grip, as shown in the illustrations, is a grip on the rescuer by a person struggling to save himself and which is likely to endanger both lives if not broken. The death grip is made possible by the rescuer not approaching a drowning person properly. The illustrations show various death grips and the methods of breaking them. In some cases it is neces-

sary to stop the drowning man's breathing by pinching hi nose and closing his mouth with your hand, by putting hi head under water, by dealing him a severe blow with your fist or by striking him with your knee in the pit of the stomach While these procedures seem brutal, they are justified in order to save life.

Q. Having the drowning person under control, how would you proceed with the attempted rescue?

A. Persons apparently drowned are suffering not only from the suffocating effects of water, but, usually, from exhaustion

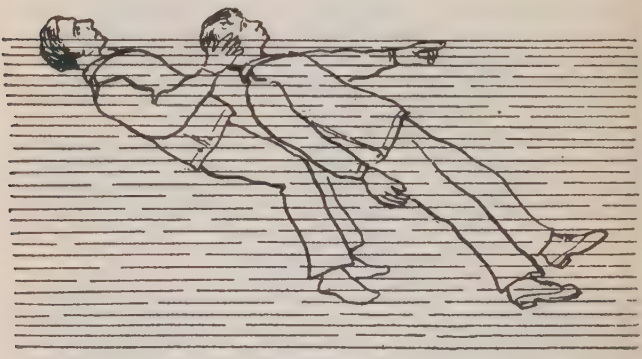


Plate XVI.

caused by struggling, and shock from fright and cold, as well. They should be promptly and gently removed from the water and efforts at resuscitation should be begun instantly.

Q. How is water removed from the lungs?

A. Remove shirts; lay the patient on his face; clasp your hands under his abdomen and raise him in order to drain water from his lungs and air-passages (Plate XX).

Q. How are the air-passages cleared?

A. Turn him on his back quickly, placing a rolled shirt under his shoulders, and thoroughly wipe out his mouth and nose. Pull his tongue well forward and tie it against the lower teeth by passing a shoestring or rubber band over it and under the chin, or hold it forward with a handkerchief.

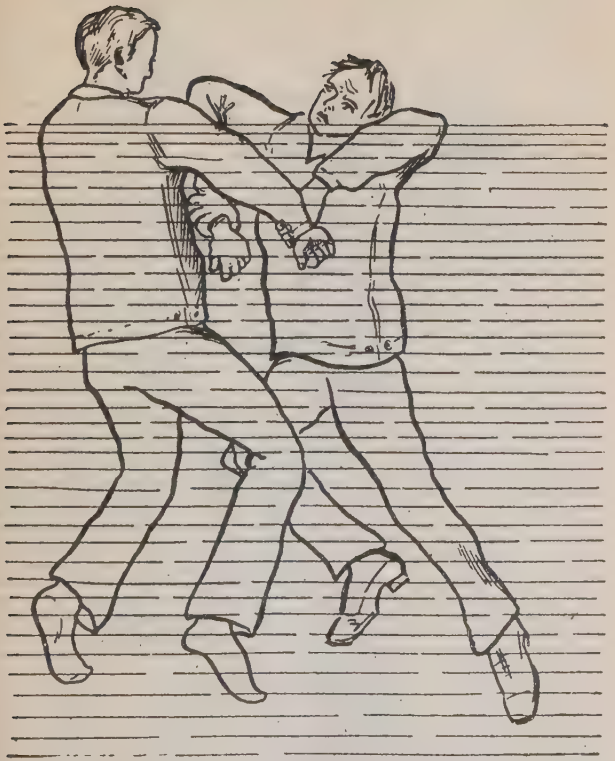


Plate XVII.
Breaking Death Grip (1).

Plate XVIII.
Breaking Death Grip (a).

Q. How is artificial respiration applied?

A. First motion: Place the shocked person on his belly, with his face turned to one side; kneel beside him and place the palms on the small of his back just below the ribs (Plate XXI); lean forward and gradually bring the weight of the body on the hands, thus forcing the air out of the lungs

Plate XIX.
Breaking Death Grip (3).

(Plate XXII). *Avoid roughness.* Second motion: Release the pressure quickly and return to the original position.

The first motion should occupy two or three seconds. After returning to the original position there should be a wait of about two seconds before repeating; thus there will be about 12 respirations each minute. Imitation of natural breathing is the object. These efforts should be kept up for at least two hours, or until natural breathing is restored.

Plate XX.
To remove water from the lungs.

Plate XXI.
To restore breathing. First motion.

All wet clothing should be removed while artificial respiration is being practised, and the body and limbs should be rubbed toward the heart. Blankets should be wrapped about the patient and warmth in the shape of hot bottles, hot bricks, hot sand, or a hot board, that may have lain in the sun, should be applied.

Do not give stimulants before the patient can swallow. Do not remove him until he is conscious and is breathing naturally.

Plate XXII.

To restore breathing. Second part of first motion.

Unconsciousness From Electric Shock.

Q. Name some ways in which men may receive electric shocks?

A. By taking hold of naked live wires with a current of high tension passing through them. They would be violently convulsed and unable to let go, or there might be insensibility, with suspended breathing, or even death. Parts of the body or clothes in contact with the wires may be scorched or burned. Lightning stroke is much the same in its effects.

Q. What would you do in order to rescue a person under these circumstances?

A. Promptly remove the sufferer from the source of danger. This must be done with the greatest care, otherwise the person giving assistance may be dangerously shocked as well. The rescuer's hands should be protected with rubber gloves; if these cannot be procured, then wrap a mackintosh coat or a thick, dry woolen cloth, or other dry article of clothing around the hands and pull the man from the source of danger. Two

live wires in contact with the sufferer may be short-circu
by dropping an iron bar or a metallic tool across them.
time should be lost.

Q. How would you treat a person under these conditions

A. He should be laid in a quiet place, his clothing loosen
and he should have plenty of fresh air. No medicines are
quired. If breathing is suspended or feeble, give artifici
respiration as described under drowning accidents. The mou
will not have to be cleared, but the tongue must be prevent
from falling back, so that its base will not close the breathi
passages.

Unconsciousness From Gas Poisoning.

Q. How would you proceed if a man were found unconscio
from gas poisoning?

A. Remove him quickly from the source of danger, at t
same time protecting yourself from undue exposure. Gi
him artificial respiration in accordance with the instructio
outlined. Send someone immediately for the nearest medi
officer.

Q. Why should first aid instructions be given by officers
divisions and not by medical officers?

A. Because divisional officers can readily be instructed
first aid by the medical officers and they should themselves
familiar with these procedures, which are really primarily mi
tary. Divisional officers are in constant contact with their me
and if the drills are given for at least two 10-minute periods
week, everyone will get the instruction, which will be co
tinuous and effective.

Q. Why was the instruction as formerly given by medi
officers a failure?

A. Because medical officers in a large ship did not get t
same man for instruction more than once in three or fo
months, and what little was learned was not taken seriou
and was soon forgotten.

PART ONE

"L"

PAINTING, AND THE PREPARATION OF THE SURFACE THEREFOR

PART ONE.

"L."

PAINTING, AND THE PREPARATION OF THE SURFACE THEREFOR.

Q. How is the SURFACE PREPARED FOR PAINTING?

A. All steel and iron work which is to be painted or cemented shall be carefully and thoroughly scraped, scaled, and cleaned down to bare surface, and *shall be thoroughly dry* before the paint, cement, or bituminous compositions are applied. In no case shall paint or other coatings be applied over damp, oily, or greasy surfaces, or over any foreign substance. *Each coat of paint shall be allowed to dry hard before applying another coat,* and shall adhere firmly to the surface of the metal.

Q. What additional precautions before PAINTING GALVANIZED WORK?

A. The surface must be cleaned with an ammonia, vinegar, or other approved solution in order to secure firm adherence of paint.

Q. What about surfaces that are to be cemented?

A. Under no circumstances are they to be painted before being cemented.

Q. What about SCRUBBING PREVIOUS TO PAINTING?

A. The preparation of the painted surface of metal work for repainting by ship's force shall be accomplished by scrubbing it with common brown soap and fresh water, using burlap or scrubbing brushes. (Soapine may also be used.) Where the old paint is lumpy or thick, fine sand may be used with the soap, but under no circumstances shall steel brushes or scrapers be used, unless the whole surface is to be cleaned.

Q. What SPECIAL CARE must be taken in painting MACHINERY AND HULL FITTINGS?

A. Special care shall be exercised in the painting of all machinery, such as ammunition-hoist gears, deck winches, power doors, hatches, etc., to see that no paint is applied to working surfaces or to oil-holes or grooves; AND TO PREVENT RUBBER GASKETS in doors, manholes, light-boxes, side lights, hatches, deck scuttles, or in any other fittings FROM BEING PAINTED, as paint causes the rubber to deteriorate rapidly. WHEN PAINT IS ACCIDENTALLY APPLIED TO GASKETS IT SHALL BE IMMEDIATELY AND THOROUGHLY REMOVED; TURPENTINE

ONLY SHALL BE USED FOR THIS PURPOSE. The bearing edge c
door frames, etc., shall never be painted. Paint shall not b
applied to fittings in such a way as to cause the bearings t
become frozen.

Q. Where are BITUMINOUS COMPOSITIONS applied?

A. The following spaces on all vessels (except over galvanized plating, or on vessels of special, light construction) shall be coated with an approved bituminous solution, and cement or enamel: Trimming tanks, drainage tanks, pump rooms, reserve feed water tanks, ship's fresh water tanks, gravity tanks, coal bunkers, chain lockers, sand lockers, top of inner bottom in engine and boiler rooms and dynamo condenser rooms, also the inner surface (including stiffeners, etc.) of bulkheads surrounding the engine and boiler rooms to the height of the floor plates, and all foundations, etc., in these spaces to the same height; also the inner surface of bulkheads surrounding the dynamo condenser rooms to a height of about 2 feet above the inner bottom and foundation in these spaces to the same height. Special attention shall be given to the thorough protection of portions of the machinery space which may become difficult of access upon completion. If recoating of any of the places specified becomes necessary, such portions as require it should be touched up (when the metal is dry and in proper condition to receive it) with red lead, or other approved composition, as the case may be, to conform to the material previously used in such compartments. The coal bunker spaces, as a whole, shall not be entirely coated, unless such coating is found to be absolutely necessary.

Q. What precaution in regard to ventilation is taken while applying bituminous composition?

A. Artificial ventilation must be furnished.

Q. When a SHIP IS DOCKED, what is done to her bottom?

A. It is thoroughly cleaned of moss, barnacles, or other marine growth, and all blistered paint scraped; but no paint of any kind that firmly adheres and affords protection is ever to be removed. Usually, moss is scrubbed off with brushes, as the water is pumped out, then barnacles are scraped off. When the surface is prepared, the painting begins. All valves leading outboard are examined and ground in, and zinc protectors renewed, if necessary. When the vessel is docked, if the hull is not found to be in a thoroughly good condition, additional coats of paint shall be given; great care must be taken, where any evidence of corrosion exists, to remove the paint and all indications of rust and to see that the surface of the metal is thoroughly dry before more paint is applied.

Before leaving dock, the entire underwater surface of the ship is given a complete coat of anti-corrosive paint followed by a complete coat of anti-fouling paint. The anti-corrosive paint protects the hull from rusting, and the anti-fouling paint helps to prevent barnacles and moss from forming on the bottom.

Q. Would you ever whitewash or shellac on iron or steel?

A. No; the Navy regulations absolutely forbid the use of whitewash or shellac on any iron or steel parts of the ship.

Q. What PRECAUTIONS BEFORE ENTERING DOUBLE BOTTOMS to paint or to clean them must be taken?

A. "When about to examine, clean, or paint double bottoms, or boilers, the following precautionary measures shall be adopted: They shall be opened and well ventilated, a connection being made to a fan system, if possible. This done, the purity of the air shall be tested before entering by burning a candle on the bottom at least five minutes. Working parties inside shall always maintain communication with someone outside; they shall also have with them a lighted candle, and shall withdraw should it begin to burn dimly."

Q. What special care must be taken in PAINTING DOUBLE BOTTOMS?

A. Always try to avoid painting a wet surface, as double bottoms sweat. Whenever the outside water is much cooler than the air inside, sweating will occur and prevent the paint from setting well.

Q. What must always be done in leaving double bottoms?

A. Always be careful that no pieces of metal, such as scrapers, hammers, pieces of copper, or brass, are left down there. They are liable to cause serious rusting by galvanic action. Cases are known where pieces of copper left for a long time in a double bottom have eaten through the plating.

Q. Is the underwater body of a wooden ship painted?

A. No; it is covered with copper plates which do not foul readily. For that reason a wooden, or a steel, ship sheathed in wood does not require frequent docking.

Q. Should electric cables be painted?

A. Never; the oil in the paint rots the rubber insulation, therefore never paint an insulated cable on board ship.

Q. What color is prescribed for the painting of the various vessels?

A. *Painted slate color:*

Battleships.
Cruisers.
Monitors.
Destroyers.

Torpedo-boats.
Submarines.
Tenders to torpedo vessels.
Auxiliaries.
Fuel ships.
Supply ships.
Tugs.
Transports.
Special types (mine ships, etc.).
Steel vessels unserviceable for war purposes.
Other vessels which are to cruise in company with the above on special instruction only.

Painted white and spar color:

Converted yachts.
Gunboats.
Sailing ships for training purposes.
Small vessels engaged in river service in China and the Philippines.
Other vessels acting singly in American tropical waters, or on Pacific coast, but only on specific instruction.

Painted white with green stripe:

Hospital ships.

Painted black:

Hulls of wooden receiving and other station ships.
Wooden vessels unserviceable for war purposes.
Yard craft (yard tugs, ammunition barges, water barges: Hulls black; upper works, spar color).

Q. What about painting BRIGHT WORK?

A. Bright brass work in the interior of the vessel, in general, shall not be painted, but on vessels painted slate color all brass work which is, or which may be, visible from the outside shall also be painted slate color.

Too much time is wasted on board ship in scraping paint off screw threads, gaskets, and other places which should never have been painted over in the beginning. A little attention to the following common-sense rules will greatly improve the condition and the appearance of the ship:

(1) NEVER UNDER ANY CIRCUMSTANCES, PAINT, GREASE, OR OIL RUBBER GASKETS of watertight doors, manholes, hatches, etc., SCREW THREADS, COMPARTMENT NAME PLATES, louvres, gauze air screens, zinc protectors on the bottom.

(2) NEVER, WITHOUT ORDERS, PAINT ANYTHING THAT HAS NOT BEEN KEPT PAINTED.

(3) NEVER PAINT OUT LETTERING without special orders to do so. All the various numbers and letters have definite meanings, and they must not be painted out.

(4) As there is a regulation way in which ships must be painted, NEVER PAINT ANYTHING A DIFFERENT COLOR without orders.

(5) In painting, USE ONLY A LITTLE PAINT ON THE BRUSH, and never paint crosswise; that is, NEVER MAKE THE STROKES CROSS; THEY SHOULD ALWAYS BE PARALLEL TO EACH OTHER.

(6) NEVER PUT THE PAINT ON IN A THICK COAT. It doesn't dry and become hard, but it is easily rubbed off days afterward, and it catches dirt continually. Put it on in thin coats, and it will dry quickly and form a hard surface. If, then, another coat is necessary, it can be put on.

(7) NEVER PAINT OVER A DIRTY SURFACE, or on a rough, unprepared surface. PAINT IS TOO FREQUENTLY USED TO SAVE SCRUBBING. The surface to be painted must be cleaned and scrubbed down to a smooth surface before any paint is applied.

PART ONE

"M"

SWIMMING; USE OF LIFE BUOYS

PART ONE.

"M."

SWIMMING; USE OF LIFE BUOYS.

Q. What is the regulation in regard to the establishment of a period for swimming?

A. The captain shall, when the weather and other circumstances permit, establish in the routine of exercises and drills a regular period for swimming, such exercise to include every enlisted person on board, except those excused by the surgeon.

Q. How is this regulation carried out in the fleet?

A. Instruction and practice in swimming is given whenever opportunity offers. In order that men may become familiar with the use of the life buoy, one of the buoys is occasionally dropped when they are in swimming. Lists of men of each division who cannot swim at least 50 yards are kept. When conditions permit, such men are sent ashore with competent instructors, or will be required to go in from the ship, using belly bands during the early stage of instruction. *This instruction includes all men of all branches who have not demonstrated their ability to swim.*

Q. What special time is usually designated for this instruction?

A. In port when circumstances permit, and the temperature of the water is not below 70 degrees, the men will be allowed and encouraged to go in swimming before breakfast, and at a convenient time in the late afternoon. As a rule, men should not be allowed to remain in the water longer than 15 minutes, nor to go in within half an hour after eating.

Q. What precaution is taken when the men are in swimming?

A. A boat properly manned and in charge of a petty officer and well supplied with life preservers will always be at hand whenever anyone is swimming from the ship. It is customary to have this boat manned by a volunteer crew.

Q. What are the REGULATIONS in regard to LIFE BUOYS?

A. The Navy regulations require that at all times at sea, and where anchored in a strong tideway in port, an efficient person be stationed to let go the life buoy. Except in small ships, one man is usually detailed for each life buoy. These men also act as lookouts, and it is important that they

clearly understand their duties. Inasmuch as it may happen that, failing the presence of a regular life buoy lookout, the life of a person in the water may depend upon the prompt and intelligent action of a person on board ship, no matter what his rating, provided he happened to be the nearest man to the buoy, it is considered advisable that men of every rating should know how to let the buoy go and when to let it go.

Q. How do you let go the life buoy?

A. Ordinarily, life buoys are let go by pulling a toggle, which releases the buoy, allowing it to fall in the water. Should it not fall of its own accord, it is probable that a slight blow will cause it to do so. The men on watch should, however, understand how to cause it to drop in case the toggle carries away, the mechanism jams, or the buoy fails to fall through any cause. They must, above all, understand that the buoy must be dropped immediately in some way, and that it is insufficient for them simply to make a routine effort to drop it, and then report that they cannot do so.

Q. WHEN SHOULD THE LIFE BUOY BE LET GO?

A. To select the proper time requires coolness and composure. A cool, intelligent man will let the buoy drop within a few feet of the man overboard; but an excitable man, or one who does not clearly understand his duties, may drop it long before the man is abreast the buoy, or long after he has passed.

Q. What is the first thing that the man at the life buoy should endeavor to do?

A. He should try instantly to find out the side on which the man fell, *and to get sight of him.* Then drop the buoy as soon as possible after the man is abreast the buoy, so that it will be between him and the ship toward which he naturally faces and swims.

Q. What is done in case the man overboard cannot be seen?

A. The man at the life buoy can usually determine on which side he fell, as he will see many of the people about the decks go to that side. Then, to avoid the possibility of dropping the life buoy on the man (instances have been recorded where men have thus been killed) the opposite buoy should be dropped when it is judged to be abreast the man in the water.

Q. What is done in case the man in the water is sighted after the first buoy has been dropped?

A. If it is seen that the second buoy can be dropped nearer to him, it should be let go; but, as a general rule, the second buoy should be kept fast (unless it is really necessary) for use in case men fall overboard in lowering or hoisting the life boat.

Q. What should the man in the water do?

A. He should swim to the life buoy and await the life boat. As previously stated, life buoys should be dropped frequently when the crew are in swimming, in order to familiarize the men with their use.

Q. What is the purpose of the above instructions?

A. They are for the guidance of the man at the life buoy in case he hears no orders, and must, therefore, act upon his own initiative. He will, of course, strictly and promptly obey any commands that he may receive from proper authority, regardless of the above instructions; but as the life buoy, to be of use, must be dropped promptly, the lookout must clearly understand that if no orders have been received by the time it is necessary to drop it (as indicated above), he must drop it at once.

Q. Why is it so important that life buoy lookouts should clearly understand the above general principles?

A. Because modern vessels are so large, and life buoys so far removed from the officer of the deck, that it is important that the life buoy lookouts—and others who may be called upon to drop the life buoy—should clearly understand the above general principles, and then, in the absence of orders, that they be governed by their common sense.

Q. What should the lookout do after dropping the buoy?

A. He should keep the man in sight until the persons specially detailed for this purpose reach their station in the after rigging, and get their bearing from the life buoy men. If one lookout is attending both buoys, it would be unwise for him to leave his station to go to into the after rigging as a lookout, but if there are two life buoy lookouts, each may be permanently stationed to go in the rigging and keep a lookout on the man after his own buoy has been let go.

ATTENTION IS CALLED TO THE INSTRUCTIONS IN RESCUING THE DROWNING GIVEN IN CHAPTER "K."

PART ONE

"N"

ATHLETICS: THE ATTENTION GIVEN THEM IN THE NAVY

PART ONE.

"N."

ATHLETICS: THE ATTENTION GIVEN THEM IN THE NAVY.

Q. What do the Naval Instructions say about Athletics?

A. "The commanding officer shall encourage the men to engage in athletics, fencing, boxing, boating, and other similar sports and exercises. Gymnastic outfits will be furnished by the department to vessels requesting them."

Q. What allowance does the government make for athletic outfits?

A. An allowance of $100 per quarter to be expended in providing athletic outfits for the crew of each battleship, and for maintaining such outfit in good condition. Proportional allowances are given to ships carrying smaller complements.

Q. What service trophies may be issued to be competed for by the various ships of the fleet?

A. "When a commander-in-chief or commander of any regularly organized force of ships shall request it, the trophies enumerated in this paragraph will be furnished to his command, one set for each of the three classes of vessels specified. These trophies shall be held as indicated by the vessel or vessels of each such class winning them, and are:

"(1) Vessels having complements of 300 or more:
Rowing—a gilded rooster.
Sailing—a small model of a Navy cutter under sail.
Baseball—a blue and gold banner.
Football—a gilded wooden football.
Fencing—crossed broadswords.
Swimming—a silver cup to the battleship of the Atlantic fleet whose crew excels in swimming.

"(2) Vessels having complements of less than 300:
Rowing—a silver rooster.
Sailing—a small model of a Navy whaleboat under sail.
Baseball—a red and gold banner.
Football—a silvered wooden football.
Fencing—crossed broadswords.

"(3) Torpedo vessels:
Rowing—a bronze rooster.
Sailing—a small model of a Navy dinghy under sail.

"All trophies shall be suitably mounted and so arranged that the necessary inscriptions can be entered upon them yearly. They shall also be protected by glass cases.

"The conditions governing the annual competitions for all trophies shall be determined for each year by a board of officers appointed on each station by the commander-in-chief thereof."

Competition for these trophies in the fleet has always been very spirited. The winning ship in baseball, football or rowing attains a prestige that is exceeded only by that acquired by a ship that wins the trophy awarded for superiority at target practice and the engineering competition.

Q. What is the CANTEEN, or SHIP'S STORE, and how may its profits be used to purchase articles of athletic outfit in addition to those purchased with the regular quarterly athletic allowance?

A. The ship's store is maintained for the convenience of the crew. Toilet articles, candy, tobacco, razors, etc., are sold. A profit not to exceed 15 per cent may be charged on sales from the ship's store, this profit to be expended for the amusement, comfort, and contentment of the enlisted force. With the profits from the canteen, athletic supplies in addition to those covered by the regular quarterly allowance are purchased, as well as moving picture machines and other articles for the recreation of the crew.

Q. What are the duties of the ATHLETIC OFFICER?

A. Each captain appoints an athletic officer, who will be in general charge of all athletics on board his ship. The captain may also appoint an officer in charge of each of the following branches of athletics: (1) Boat racing; (2) football; (3) baseball; (4) track and swimming; (5) basket ball; (6) boxing, fencing, and gymnasium athletics. These officers are assistants to the athletic officer and act as coaches for their respective teams. Such coach or other officer will always be in charge of the team during all match games.

Q. What is customary in regard to the arrangement of the watches of men engaged in athletics?

A. The watches should be so arranged that no hardship shall be worked on the men engaging in athletics, or upon other watch standers, by relieving those who participate in athletics at such times as their watches interfere with athletic preparation or with contests.

In addition to the department trophies awarded for excellence in the various branches of athletic sports, there are numerous cups and trophies that have been offered by indi-

viduals. These trophies are competed for by the various vessels of the fleet as the commander-in-chief may direct. Although many of the events are for crews and teams of selected men from the various ships, there are also many competitions for novices; and it must also be remembered that the picked teams and crews are selected only after all volunteers in any particular line of athletics have been carefully tried out.

In general, the rules of the Amateur Athletic Union govern all athletic contests.

In the fleet there are races from one to three miles in distance for the various classes of pulling boats, sailing launches, cutters in service condition, racing cutters, whaleboats, and dinghys.

Two sailing regattas are usually held during the year. The events are: Free-for-all (any boat carried by any vessel of the fleet and propelled only by sail power), races for sailing launches, cutters, whaleboats, and dinghys.

In the Atlantic fleet the field and track meet takes place in June; any enlisted man attached to the fleet is eligible for entry in any event; but a man may not enter more than two events, exclusive of the relay race. At this meeting there is a tug-of-war.

There is a series of boxing bouts every year.

In baseball, every ship of a division plays every other ship of that division for the division championship. Then, in turn, the squadron and fleet championship is determined.

The fleet championship at football is usually decided by an elimination series; and the basketball championship in like manner.

Swimming races are held, the distances being as follows: One mile, ½-mile relay, ¼ mile, 200 yards, 50 yards.

Auxiliaries and torpedo vessels hold competitions for trophies that are awarded to such vessels.

PART TWO

THE SUBJECTS WHICH SEAMEN, SECOND CLASS, SHOULD KNOW

PART TWO

"O"

BOATS; TYPES; NOMENCLATURE; GEAR; DUTIES OF A BOATKEEPER

PART TWO.

"O."

OATS; TYPES; NOMENCLATURE; GEAR; DUTIES OF A BOATKEEPER.

Q. What boats are supplied to vessels of the Navy?

A. Vessels of the Navy are supplied with one or more of ne following classes of boats:

Type.	Length in Feet.
Steamers.	50, 40 and 30 feet.
Motor boats.	Various sizes.
Sailing launches.	50, 40, 36, 33, 30 and 24 feet.
Motor sailing launches.	50, 40, 36, 33, 30 and 24 feet.
Cutters.	30, 28, 26 and 24 feet.
Whaleboats.	30, 28, 24 and 20 feet.
Motor whaleboats.	30, 28, 24 and 20 feet.
Dinghies.	20 and 16 feet.
Dories.	17 feet.
Motor dories.	21 feet.
Wherries.	14 and 12 feet.
Punts; catamarans.	14, 12 and 10 feet.

Steam barges or motor barges, are supplied to flagships.

A whaleboat habitually used by a commanding officer and lying his pennant is known as a Gig while it is so employed.

In addition to the boats mentioned above, there is a standard 1-foot racing cutter.

Q. What is meant by the term Power Boat?

A. A power boat is a boat propelled by any mechanical power, such as steam, or internal combustion engine, or electric motor.

Q. How are the boats of the various classes distinguished in each ship?

A. By their numbers in each class—first, second and third steamers; first and second whaleboats, etc.

Q. Give the number, type, length in feet and stowage of the boats of your ship.

Q. Give brief general description of each type of boat issued to vessels of the Navy.

A. 1. Steamers are fitted to mount a light rapid-fire or machine gun in the bow. They are not fitted with sail power,

but have rowlock sockets in the gunwale and should always carry two oars and rowlocks for use in an emergency.

2. SAILING LAUNCHES: heavy working boats; square-sterned, and generally sloop rigged. They are fitted to mount a light rapid-fire or machine gun in the bow. Instead of rowlocks, they have grommets and thole pins. By double banking the oars, considerable speed may be made. They are used for ship's heavy work, such as carrying stores, or large liberty parties or landing force, carrying out anchors, weighing kedge anchors. All are built with an engine foundation so that a motor may be readily installed. Motor sailing launches have all the outfit of sailing launches, and, in addition, the running lights, bell and fog horn required by law. The 24-foot sailing launch is fitted with swivel rowlocks and lug rig.

3. CUTTERS are double-banked, square-sterned boats, with finer lines than launches, pulling 10 or 12 oars, according to size. They are used as running boats and for ship's general duties. They are fitted with either sunken or swivel rowlocks. Sailing rig: the sliding gunter or double standing lug rig, either with or without jib. They are frequently fitted to carry a light rapid-fire or machine gun in the bow. These boats are not being supplied to the newest vessels.

4. WHALEBOATS are double-ended and may be either single, or double banked, pulling 6 or 12 oars, respectively. They are used as running boats and for ship's general duties of a lighter character than that assigned to launches and cutters. They are fitted with swivel rowlocks. Sailing rig: the sliding gunter or double standing lug rig, frequently without jib. In port they are steered with a rudder, but at sea are fitted with a steering oar passed through a steering rowlock on the quarter. These boats are particularly adapted for use at sea; hence their use as lifeboats.

5. DINGHIES are small handy boats, shaped like cutters, single banked with 4 oars. They are used as market boats or for light rough work, or ship's light duties. Owing to the small crew required, they are particularly convenient for nearly any light work in port. They carry sails and are sprit rigged.

6. WHERRIES are light handy boats for officers' use. They can be pulled by one man. No sails are furnished.

7. PUNTS are rectangular flat-bottomed boats intended for painting and general cleaning around the ship's water line. They are fitted with rowlocks on each side, but they are usually propelled by sculling.

8. CATAMARANS (or BALSAS) are platforms secured to two hollow floats. They are used for the same purpose as punts,

but are less handy. They are fitted with swivel rowlocks and oars, but are usually sculled.

9. MOTOR BOATS are classified as follows:

(1) The barge of a flag officer as a "motor barge."

(2) Service type launches built for heavy duty, and speed and semi-speed boats, as "motor boats."

(3) Sailing launches with auxiliary engines as "motor sailing launches."

(4) Double-ended power boats, whaleboat type, as "motor whaleboats."

(5) Power dories as "motor dories."

Q. Where are complete instructions in matters pertaining to boats and boat exercises to be found?

A. In "Deck and Boat Book of the United States Navy."

Q. Referring to the parts of a naval boat, what is the BACKBOARD?

A. The thwartship board immediately forward of the coxswain's box, placed across the stern-sheets of the boat to support the backs of the occupants.

Q. What is the BILGE?

A. The flat part of a boat's bottom, on each side of the keel, on which the boat would rest if aground. The bilge extends out to where the frames turn upward, which part is known as the "turn of the bilge."

Q. What is the BOOM?

A. The long pole or spar used to extend the foot of a fore-and-aft sail, for example, main boom, jib boom.

Q. What are BOTTOM-BOARDS?

A. The fore-and-aft strips secured to the frames, forming the floor of the boat.

Q. What are BRAILS?

A. The lines used for hauling the clew of a fore-and-aft sail up to the masthead. They are secured to the clew of the sail, lead up through leaders at the masthead, thence down into the boat.

Q. What is the DEAD-WOOD?

A. A body of timber built on top of the keel at either end of the boat to afford a firm fastening for the cant-frames.

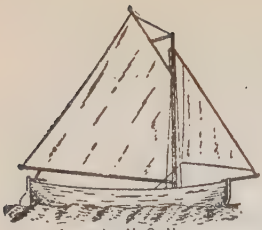
Q. What are the FRAMES?

A. The ribs of the boat—curved timbers secured to the keel and extending upward to the gunwale.

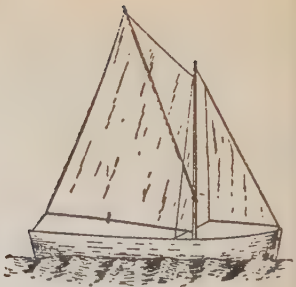
Q. What is meant by the FORE-SHEETS?

A. The portion of the boat forward of the foremost thwart.

Q. What is the GAFF?

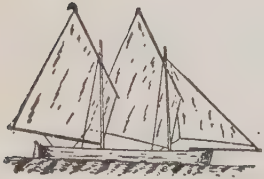


Launch—U. S. Navy.
(Gaff and Boom Rig)

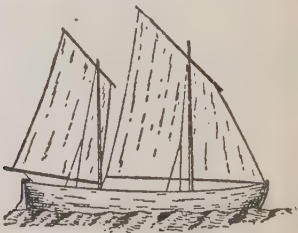


Sprit Rig.

Sliding Gunter



Standing Lug



Dipping Lug Foresail and
Standing Lug Mainsail.

Rig of Boats for Sailing.
Plate 1.

A. A spar used to extend the upper edge of a quadrilateral fore-and-aft sail.

Q. What is the GOOSENECK?

A. A sort of iron hook fitted to the inner end of the main boom, used for securing the latter to the mainmast. It permits free movement of the boom in any direction, with the gooseneck as a center.

Q. What are GRIPES?

A. Boat gripes are made of sennit or canvas and go around the bottom of the boat in securing it for sea; gripes for life boats are usually fitted with a slip hook. Gripes for steamers and sailing launches are made of chain, have a hook or a clamp on the rail, and are secured to the deck by turnbuckles.

Q. What are GUDGEONS?

A. Small metal fittings, similar to eye-bolts, secured to the stern-post of a boat for the rudded to hang on. They receive the pintles and thus support the rudder.

Q. What are HALLIARDS?

A. Lines used to hoist and lower topmast or jib; also lines used to hoist or to lower the gaff of a sloop.

Q. What is the HEEL OF A MAST?

A. The lower part of the mast; the end of the mast which fits in the step on the keel.

Q. What is the KEEL?

A. The principal timber of a boat, extending from stem to stern at the bottom and supporting the whole frame.

Q. What is meant by LUG-RIG?

A. Applied to large quadrilateral sails bent to yards that hang obliquely to the mast; the halliards are secured nearer to one end of the yard than to the other. In the "standing lug" rig used in the Navy, the foretack is lashed to an eye-bolt on the after side of the foremast.

Q. What is the MAIN-BOOM?

A. The boom on the mainmast which spreads the foot of the mainsail.

Q. What are the parts of an OAR?

A. 1. The blade—the broad, flattened part of an oar.

2. The loom—the portion of the oar extending from the blade to the handle.

3. The handle—the small part of an oar, on the inboard end of the loom, which the oarsman grasps when pulling.

Q. Referring to an oar, what is the LEATHER?

A. That portion of the oar that rests in the rowlock. This is sometimes covered with canvas; but it is usually covered with leather, hence the name.

Q. What is a PAINTER?

A. A rope, secured in the bow, for towing, or for securing the boat.

Q. What is a PLUG?

A. The stopper which is placed in the drain-hole when the boat is lowered. It should be secured in the boat by a small lanyard.

Q. What are PINTLES?

A. Small straight pieces of metal secured to the rudder and fitting in the gudgeons on the stern-post thus supporting the rudder. In some boats the pintle is a long erect pin on the stern-post fitting in rings or gudgeons on the rudder.

Q. What is meant by the RISING?

A. The narrow fore-and-aft strakes inside of a boat, secured to the frames on which the thwarts rest.

Q. What are ROWLOCKS?

A. Forked pieces of metal in which the leather of oar rests while pulling. Sunken rowlocks are those which are set down in the gunwale of the boat. Swivel rowlocks are movable, a pin on the rowlocks fitting in a socket in the gunwale.

Q. What is the RUDDER?

A. A flat plank hung abaft the stern-post by means of gudgeons and pintles, used for steering a boat.

Q. What is meant by SHEER?

A. The rise of the longitudinal lines of a boat from the horizontal plane, as seen in looking along the side of the boat; the curve of the gunwale when compared with the straight water-line.

Q. What is the SHEER-STRAKE?

A. The upper strake of the boat.

Q. What are STRAKES?

A. Continuous lines of fore-and-aft planking. Each line of planking is known as a strake.

Q. What is the SHEET?

A. The lines secured to the clew of a sail, or to the main boom, used to set the sail and to hold it in position.

Q. What are SHROUDS?

A. Lines leading from the masthead to the rail of the boat; they support the mast on each side.

Q. What is meant by SLIDING-GUNTER RIG?

A. A rig for boats in which a sliding topmast is used to extend a triangular sail. As used in the Navy, it consists of two triangular sails (fore and mainsail) and usually a jib. The mainsail is fitted with a main boom.

Q. What is meant by SLOOP-RIG?
A. This rig consists of a large fore-and-aft sail—quadrilateral in shape—with gaff and boom; also a jib and jib boom.
Q. What is meant by SPRIT-RIG?
A. This rig consists of a large fore-and-aft sail—quadrilateral sail, the peak of which is held out by a light movable wooden boom, called a sprit, which, when in place, extends from the peak of the sail to a stirrup on the lower part of the mast.
Q. What is the STEM?
A. The up-turned portion of the keel, at the bow of the boat, to which the forward ends of the planks are secured.
Q. What is the STEP OF MAST?
A. A small metal receptacle on the keel in which the heel of the mast rests.
Q. What is the STEERING-ROWLOCK?
A. A peculiar form of swivel rowlock, fitted near the stern of a whaleboat, in which the steering oar is shipped. It is sometimes called a crutch.
Q. What is the STERN-FAST?
A. A stern painter for use in securing the stern of a boat.
Q. What is the STERN-POST?
A. The principal piece of timber in the stern of the boat; it is a continuation of the keel at the after part of the boat.
Q. What is meant by the STERN-SHEETS?
A. The space in the boat abaft the thwarts.
Q. What are STRETCHERS?
A. Athwartship, movable pieces against which the oarsmen brace their feet in pulling.
Q. What is a STRONG-BACK?
A. The spar lashed to the two davits on which a boat is hoisted.
Q. What are THRUM-MATS?
A. Mats made of small pieces of canvas with short strands of rope yarn sewed ont it—called "thrumming." These are placed between the rowlocks and the oars to prevent noise in pulling.
Q. What are THWARTS?
A. The seats on which the oarsmen sit.
Q. What is the TILLER?
A. A bar or lever fitted fore and aft in the rudder head by means of which the rudder is moved.
Q. What is the TOPPING LIFT?
A. A line used for supporting or hauling up the boom of a fore-and-aft sail.

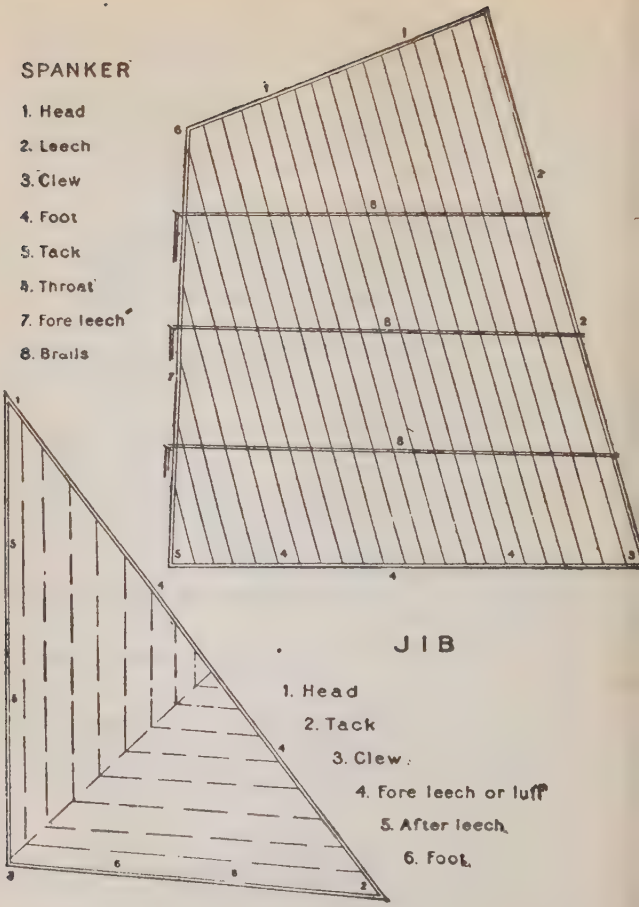

SPANKER
1. Head
2. Leech
3. Clew
4. Foot
5. Tack
6. Throat
7. Fore leech
8. Brails
JIB
1. Head
2. Tack
3. Clew
4. Fore leech or luff
5. After leech
6. Foot

Plate 2.

Q. What are TRAILING LINES?

A. Small lines secured to the boat and around the oars to prevent the latter from getting adrift when they are trailed.

Q. What is a YARD?

A. A spar to which the head of a lug sail is attached. The term "Lug" is applied to the forward part of it when it has to be dipped (in some rigs) from one side of the mast to the other in going about.

Q. What is the YOKE?

A. Athwartship piece fitting over the rudder head by which the rudder is moved when the tiller is not shipped.

Q. What are YOKE LANYARDS?

A. Small lines attached to or rove through the ends of the yoke for use in steering when the yoke is shipped.

Q. Name the parts of a fore-and-aft sail.

A. See plate 2.

Q. What boat gear shall be carried by pulling boats at all times, except when special circumstances render it undesirable?

A. Rudder and tiller each fitted with light lanyard. Plug secured to keel by good lanyard. One set of rowlocks with two spare ones; 3 boat hooks, except dinghies and wherries which carry 2. Boat bucket for bailing and general use. Breakers with enough fresh water to allow ½-gallon for each person in the crew. Boat box containing tools, palm, needles, lead line, matches, signal lantern and other articles (not furnished for dinghies, dories or wherries). Painter and stern fast. Anchor and cable. Spars, sails and rigging. One set of oars with spare oars for one thwart. One set of stretchers. Canvas bag containing boat ensign and staff, red wigwag flag and staff, answering pennant and staff, boat distinguishing flag and staff. Compass. Set of boat fenders.

The compass, unless secured in boat, shall habitually be kept in the navigator's storeroom when the boat is not in the water.

Q. When are cooking utensils supplied?

A. Only when required. Boat expeditions may, or may not require them, depending on the nature of the service.

Q. What are the instructions in regard to LIFEBOATS?

A. *At sea,* the boats most suitable for lifeboats, one on each side, shall always be ready for lowering. In these boats there shall always be life preservers, water, bread, a compass, and a lantern with a supply of oil and means to light it. The detaching apparatus must be kept in order and ready for use, the steering oar shipped.

In port, one or both lifeboats shall be kept ready for immediate use, from sunset until colors next morning.

Q. What are the instructions for the LIFEBOAT'S CREW?

A. Lifeboat crews for each watch are posted on the ship's station bill. When a lifeboat crew is mustered, the men shall muster in a line abreast their boat—or the lee boat—in the order of their thwarts, facing inboard. Men stationed to lower must be abreast the davits; they shall personally see that the falls are clear.

Members of the crew are permanently stationed for unhooking the falls, tending sea painter, and other special duties. *The lifeboat crew of the watch, including the men stationed for lowering, for observing the man, for signalling, etc., are not to go below the upper deck without permission.*

At night the lifeboat crew of the watch and other men stationed for special duties in regard to the lifeboat, shall remain near their stations.

At the beginning of every watch at sea, the officer of the deck has the lifeboat crew of the watch mustered abreast the lee boat, and the coxswain of the lifeboat crew of that watch makes an inspection to see that both lifeboats are ready for lowering, and then reports to the officer of the deck.

Q. Why is a detaching apparatus fitted to lifeboats?

A. Because it is often necessary to lower them while the ship is going ahead, and the boat would be in danger of swamping if both falls were not cast off as soon as the boat touches the water, or even a few inches before she touches the water.

Q. What is a SEA PAINTER?

A. It is a line led from a point well forward on the ship, outboard of everything, and secured to the inboard side of the forward thwart of the lifeboat in such a manner that it can be readily cast off. The strain on the sea painter helps sheer the bow out when the boat strikes the water, and thus aids her in getting away from the ship's side.

Q. What do you do if you are a member of the lifeboat's crew and you hear the word "Man Overboard?"

A. Go to your station *on the run*. Jump in the lee boat, put on a life belt, get your oar ready, then if you are all ready seize a life line. Ordinary seamen are seldom detailed to lower the boats; in fact, the entire crew and men detailed for duties in connection with lifeboat are usually seamen.

Q. When is a lifeboat secured for sea?

A. When in the following condition: Boat at davits, griped in, falls clear, detaching apparatus ready, steering oar shipped, trailing lines on oars, rowlocks shipped and fitted with lanyards, plug in, sea painter half-hitched around forward thwart, life lines bent to span, life jackets in boat, lantern filled and trimmed

—and, *at night, lighted*— all other articles of boat equipment in boat, 2 days' water and provisions for crew.

Q. WHAT GENERAL RULES GOVERN A GOOD OARSMAN?

A. A good oarsman in a well-drilled crew sits erect in his thwart, feet together on stretcher bar, hands together on handle, with backs up, oar level with rail, blade trimmed with blade of stroke oar.

For explanation, the stroke may be divided into motions. At "GIVE WAY TOGETHER," *the first motion* is to lean well forward, keep back straight, shove both arms out perfectly straight in front, point blade forward and down, and turn it so that as it is about to enter the water the flat part of the blade is perpendicular. *The second motion:* With feet on stretcher bar, eyes right aft (not watching blade), keep arms perfectly rigid and lean back beyond the vertical. Always lay back on your oar and pull it through the water. *Do not attempt to pull with your arms alone,* but always bring the muscles of your back into play. The *third motion* is known as the "recovery." When leaning back beyond the vertical, by bending the arms quickly, the blade is pulled through the water and a sudden force is applied to the oar; this is the most efficient part of the stroke. The oar is withdrawn from the water, the wrists are dropped until the blade is parallel to the water. Take the next stroke without stopping.

Q. What are the GENERAL RULES for boats' crews?

A. 1. When the boat is called away, move on the *run* and man the boat as soon as posible.

2. If the boat is at the boom when she is called away, the boatkeeper should haul her up and hold her under the ladder or pendant while the crew embark. The men should sit down on their thwarts and stand by to drop the boat down quickly as the coxswain directs.

3. If the boat is hoisted, the crew should take stations for lowering, put in the plug, see the falls clear and await orders. When the boat is in the water, the falls should be hooked to the ship's side and the men on deck should haul the falls and stoppers taut and then man the boat on the run.

4. Every member of the crew should know how to hook and unhook boat falls, and how to pass a stopper properly. In lowering, unhook the after fall first. In hoisting, hook the forward fall first.

5. Always pull a good strong stroke, and pay strict attention to orders. Paddling and slouchiness in a man-of-war boat is inexcusable.

6. Never stand up in a boat if you can avoid it. In stepping and unstepping masts and making sail, not more than 2 or 3 men need stand.

7. The crew of a boat must always be in uniform and perfectly clean.

8. Never climb the mast of a boat if anything is to be done. Unstep the mast.

9. Never talk in a boat, whether you belong to the crew or are a passenger.

10. Always get into a boat ahead of an officer and leave it after him, unless he gives orders to the contrary. If you are a passenger, always rise and salute when an officer enters or leaves a boat in which you are seated.

11. With the exceptions stated above, men in a boat do not salute while under way. The boatkeeper or the coxswain salutes officers in other boats.

Q. How are thwarts and oars numbered?

A. From forward. Double-banked thwarts are designated by No. 1, starboard; No. 1, port; No. 2, starboard; No. 2, port, etc. The thwarts next to the bow and stroke are also properly designated as second bow and second stroke.

Q. How are boats called away?

A. Usually by the bugle. The calls are different for the different classes of boats, but they are very easily learned, if men are attentive to them when they first go on board ship. After "taps," boats are never called away by bugle, but always by sending the anchor watch to notify the coxswain. Except in case of emergency, no bugle calls are sounded on board ship from "taps" to "reveille."

COMMANDS FOR BOATS UNDER OARS.

Q. What do you do at the command "STAND BY THE OARS"?

A. Every man except the bowman seizes his oar by its handle and sees the blade clear of other oars. Shove oar forward over the gunwale far enough to bring handle in proper position, but keep it fore and aft.

Q. What do you do at "SHOVE OFF"?

A. Bowmen shove bow away from ship's side with boat hooks. Inboard stroke oar helps coxswain sheer boat off by hauling ahead on stanchions of gangway, or on grab rope, and then takes his seat as soon as possible and prepares to get oar out with rest of crew. Men abreast fenders rig them in. Bowmen place boat hooks fore and aft amidships and get oars ready.

Q. At "OUT OARS"?

A. Throw blades out horizontally, put both hands on handle, trim blades flat and directly abeam. This is the position of "Oars." If bowmen are ready, they throw oars out with rest of crew. If not, they swing oars out together, touch blades forward, and come to position of "Oars," or take up stroke with rest of crew.

Q. At "GIVE WAY TOGETHER"?

A. Take full stroke, keeping exact stroke with starboard stroke. Always feather blades. Pull strong steady stroke, always using your back. Keep quiet.

Q. At "IN BOWS"?

A. Bowmen finish stroke they are on. Toss oars together half way to an up-and-down position. Boat oars together. Seize boat hooks. Stand erect in bow, facing forward. Hold boat hooks up-and-down in front of them, until needed. Rest of crew keep up the stroke.

Q. At "OARS"?

A. Finish stroke you are on. Come to position "Oars" (described above).

Q. At "WAY ENOUGH"?

A. Toss oars together half way to an up-and-down position, and lay them in boat, with the least possible noise, rigging blades entirely inside gunwale. Stroke oarsman next to landing takes up a boat hook. Men nearest fenders place them over on inboard side. Bowmen and stroke oarsmen check headway, keep boat clear, haul alongside.

Q. What difference in executing this command with a single-banked boat?

A. The oars would be trailed when the above instructions require those of a double-banked boat to be tossed and boated. Oarsmen let go handles, allowing the oars to trail in a fore-and-aft direction. In this case, do not boat the oars until the command "Boat the oars."

Q. What do you do at the command "UP OARS"?

A. Everyone, except the bowmen and the inboard stroke, tosses oars quickly to an up-and-down position. Trim blades fore-and-aft, and in line with that of stroke oar, handles of oars resting on bottom boards, outboard hand grasping loom of oar at height of chin, wrist of inboard arms resting on inboard thigh and steadying oar.

Q. At "LET FALL"?

A. Raise oars from bottom boards, drop blades outboard into rowlocks smartly and together. Slip inboard hand to handle of the oar and come to position "Oars" with both hands on the handle. In letting fall, *don't let the blades touch the water.*

Q. At "STAND BY TO TOSS, TOSS"?

A. The first command is a warning to the crew. At the command "Toss," finish the stroke, and then toss oars to an up-and-down position by pressing smartly on handle with inboard hand, assisting the oar with outboard hand under the loom. Lower handle of oar to bottom boards and take position described at "Up Oars." Inboard stroke boats his oar quickly, after he has it in up-and-down position, seizes boat hook, and helps check headway and haul stern into gangway.

Q. How boat the oars from the position "Toss"?

A. By the command "BOAT THE OARS." Put oars, quietly and quickly, fore-and-aft in the boat. This command may be given from any position, but usually from "Toss."

Q. What do you do at the command "TRAIL"?

A. Finish stroke. Release handle of oar, letting it draw fore-and-aft, and trail alongside. If no trailing lines are fitted, keep handle of oar in hand. If cutter has sunken rowlocks, lift handle of oar quickly when blade is in water at middle of stroke. Throw oar out of rowlock, and keep handle in hand.

Q. At "HOLD WATER"?

A. Stop pulling, drop blade in water and hold it up-and-down, pointing directly abeam.

Q. At "STERN ALL"?

A. Back the oars, keeping stroke and feathering as when pulling ahead.

Q. At "BACK STARBOARD (OR PORT)"?

A. Back the designated oars as at "Stern All."

Q. At "BACK STARBOARD (OR PORT), GIVE WAY PORT (OR STARBOARD)"?

A. Back designated oars, others give way together.

Q. At "POINT THE OARS"?

A. Stand facing aft, point blades outward and downward at angle of about 30 degrees, ready to shove off when ordered to do so.

BOATS UNDER SAIL.

Q. What is meant by the TRIM of a boat?

A. The way she sits in the water. She is said to trim by the head or by the stern, according to whether she is deeper in the water forward or aft.

Q. What effect does the position of weights have in sailing a boat?

A. If most of the weight is forward, she will trim by the head. In this case, her stern is light, and not deep in the water;

consequently the stern will tend to blow off to leeward, throwing her head up into the wind. She will need weather tiller to keep her by the wind. Similarly, if weights are well aft, her stern will be deep in the water, and her bow light. The wind will blow the bow off; the boat will tend to fall off, and it will require more lee tiller to keep her by the wind.

Q. What is meant by "By the Wind?"

A. A boat is on, or by the wind, when she is sailing as close to the wind as she can, and still keeps good headway.

Q. What is meant by weather tiller and by lee tiller?

A. Weather tiller: when the tiller, looking forward, points to the weather side. Lee tiller is just the opposite.

Q. What do you mean by the weather side?

A. The side towards the wind, that on which the wind first strikes. The lee side is the side away from the wind.

Q. What is the tiller?

A. The bar fitted fore-and-aft in the rudder head, by means of which the rudder is moved.

Q. How get a cutter or a whaleboat under sail?

A. The command "Way Enough" is given, and executed, as described for boats under oars. When oars have been boated, launch mainmast forward and foremast aft till heels of the masts are even with their steps. At the command "Step the Masts," guide heels of masts into steps, raise masts, step masts. Cast adrift shrouds and set them up. Do as little standing in the boat as possible. When ready, "Loose sail" is given. Stroke oars cast off sheet from main, and take place in stern sheets with main sheet in hand. Designated members of crew attend main brail, man main-topmast halliards, attend fore brails, jib halliards, fore and jib sheets. When ready, the command "Make sail" is given. Haul aft port (or starboard) sheets. Coxswain lays boat by tiller to desired course, or by the wind as the case may be. Hoist topmasts chock up. Hoist jib halliards. *Never belay a sheet in a sailboat.* Designated men attend sheets, always keeping them in hand. Men not actually occupied remain on their thwarts, or take such position as the coxswain may direct in order to trim the boat. This method is for the sliding-gunter rig. For definition of sheets, brails, halliards, shrouds; see table of definitions at beginning of chapter.

Q. What is meant by the STARBOARD TACK?

A. When the wind is from the starboard side of a boat. Port tack, the opposite.

Q. What is TACKING?

A. When a boat is close hauled on one tack, by putting the

tiller down and letting go the head sheets, she is brought up head to wind; then by properly working the sails, she is made to fall off on the other tack. This is tacking. The head goes through the wind.

Q. What is the object of tacking?

A. To work a boat to windward.

Q. What is meant by putting the tiller down?

A. Putting the tiller over to the lee side.

Q. What is meant by putting the tiller up?

A. Putting the tiller over to the weather side.

Q. How tack a service cutter or whaleboat (sliding-gunter rig)?

A. Ease the tiller down; this throws head up into wind. Haul main boom amidships. When wind gets ahead, let main boom swing free until she is well around. As she comes up, when jib begins to shiver, ease off jib sheet roundly so that pressure of wind against jib will not keep her from coming into the wind. Hold on to foresheet until foresail ceases to draw, then let go the foresheet. If, as often happens, the boat seems inclined to stop with wind ahead, haul aft the jib-sheet which was in use before commencing to tack. This will pay the head off as desired. As this stops headway, it should not be done unless necessary. *Never hold the jib directly out.* This is too often seen; in reality, it simply stops the boat, without even paying her off. When wind is slightly on new weather bow, haul aft jib and foresheets for new tack, and when well around, haul in the mainsheet and trim her by the wind. If at any time during tacking the boat gathers sternboard, shift the helm. If it is seen she will not go around, pay off to old tack with jib and try again.

Q. What is meant by WEARING?

A. Getting a boat on the opposite tack by putting the helm up, running off from the wind and gradually bringing her to the wind on the other tack. The head goes away from the wind; the stern goes through the wind.

Q. Which is the better method of working to windward, tacking or wearing?

A. Tacking; because if this maneuver is properly executed, a boat will lose nothing to leeward. On the contrary, she will *head reach* and gain. That is, she will, while in stays (while in the process of tacking) run several boats lengths to windward. In wearing, on the contrary, as a boat is running dead to leeward a part of the time, much distance is lost. The only

advantage of wearing lies in the fact that there is always possibility of failure in tacking, and greater certainty about wearing.

Q. How wear a service cutter or whaleboat?

A. Put tiller up. Ease off sheets as wind hauls aft. Man the main brails. Up mainsail. Brail up main boom and shift over main sheet. When the wind is aft, shift over the fore and jib sheets, leaving them well eased off. The moment the wind has passed the stern, haul aft main sheet. Ease down the main boom by brails. This, together with helm and headway, causes boat to fly up rapidly into wind. Just before getting by the wind, haul flat aft the fore and jib sheets.

Q. What is leeway?

A. The drift a boat makes away from the wind when close hauled.

Q. What is meant by "heaving to?"

A. Bringing a boat's head to the wind, and so adjusting her sails that she will make no headway through the water.

Q. How HEAVE TO in a Navy cutter or whaleboat (sliding-gunter rig)?

A. Put the tiller down. Brail up foresail. Haul aft weather jib sheet. Put main boom amidships.

Q. How douse sail?

A. At command "Stand By to Shorten Sail," man brads and tend halliards. Get jib tack ready for slipping quickly. At command "Shorten Sail," lower topmasts, brail up clews of sails, ease off sheets and finally let them go. Ease off jib tack. Keep fast jib halliards and smother jib into foremast. Sit down on thwarts and await the order, "Furl sails." Bundle all gear into sails, roll them up neatly around mast, making a smooth skin, pass sheets around sails, binding them to masts. At command "Prepare to Unstep, cast off shrouds, frap each sail securely into its mast, bind shrouds together near foot of mast. When all ready for unstepping, the command is "Stand by; unstep." There is a slight pause between these commands. At last command, men designated seize masts and lift them until heel is clear of hole in thwart. Lower the masts, *foremast on port side, mainmast on starboard side*. After masts are stowed, quickly take your seat on the thwart.

Q. How quickly should a well-drilled crew be able to go from oars to sail, or from sail to oars?

A. In one minute.

Q. What is gybing?

A. A boat gybes when the wind shifts around the stern, causing the main boom to fly over rapidly from one side to the other.

Q. Is it ever safe to gybe?

A. Only in moderate breezes. If the breeze is fresh, always brail up before letting the wind shift from one quarter to the other.

Q. What is meant by luffing?

A. Putting tiller down, throwing boat up into the wind.

Q. How reef sail?

A. Luff boat up a little with tiller. Ease down topmast halliards. Secure reef earings at tack of sail, pass points around foot of sail. The earing in the leech should be tightly bound around the foot of the sail, not around the boom. Keep boat under command while reefing.

Q. When is it time to reef?

A. When a boat begins to take in water over the lee rail. Never be afraid of reefing too soon.

Q. What is meant by "wing and wing?"

A. When a boat, sailing before the wind, rigs foresail out on opposite side from main, she is sailing wing and wing.

Q. Is this safe?

A. Yes, in moderate weather.

Q. If it is found necessary to carry ballast in a ship's boats, what should it be?

A. Always water in breakers. Never carry sinking ballast; that is, ballast heavier than water. Stow weights as low as possible.

DUTIES OF BOATKEEPERS.

Q. How are boatkeepers detailed?

A. By the coxswain of the boat, usually by thwarts in rotation. Two men are assigned for one day so that they may relieve each other.

Q. When do boatkeepers clean their boats?

A. Both boatkeepers of a running boat clean her our during the morning watch. *Boats must be in all respects ready for use* at 8.00 a. m.

Q. When are boatkeepers to be in their boats?

A. The boatkeeper of the forenoon watch goes into his boat (when at the boom) at 8 a. m., dressed in *the uniform of the day*. One of the boatkeepers is *always* to be in his boat when she is at the boom, while the ship's colors are hoisted, unless ordered by the officer of the deck to come on board, on account of bad weather. If ordered in on this account, they will remain on deck in sight of their boats, and watch and tend them from that position.

Q. WHAT, IN GENERAL, ARE THE DUTIES OF BOATKEEPERS?

A. The boatkeepers should be careful that the oars and other gear in their boats are always neatly placed, and that the awning is properly spread. They will wipe out their boat and touch up the bright work as often as necessary. They if necessary, haul their boat up to the boom in order to clear boats coming alongside the gangway. When not otherwise engaged, BOATKEEPERS WILL ALWAYS SIT UP PROPERLY IN THEIR BOATS, AND WILL NEVER LOUNGE OR READ.

Q. WHAT SALUTES DO BOATKEEPERS RENDER?

A. When boat awnings are not spread, THEY ARE TO STAND UP AND SALUTE ALL OFFICERS WHO PASS THEIR BOATS, OR WHO COME ALONGSIDE OR LEAVE THE GANGWAY. If awnings are spread, they will sit erect and salute. *When more than one boat is at the boom, boatkeepers will salute together.* AT MORNING OR EVENING COLORS BOATKEEPERS STAND FACING THE SHIP'S COLORS AND SALUTE AS IF ON DECK. If boat awnings are spread, they will be furled at "First call" in the evening. THE RULES REGARDING SALUTES EXTENDED BY BOATKEEPERS APPLY TO ALL MEN IN BOATS AT THE BOOM, OR RIDING ASTERN, ALL MEN IN SUCH BOATS SALUTE TOGETHER.

Q. WHAT ARE THE DUTIES OF THE BOWMAN IN A TOW WITH REGARD TO THE PAINTER?

A. The bowman in the tow must not give the towing boat his painter until she is in line ahead; HE WILL THEN TAKE IN THE SLACK OF THE TOWLINE, KEEPING A STRAIN ON IT AND GRADUALLY PAY IT OUT. In this manner way is gotten on the tow *gradually*. If the tow is gotten under way suddenly, a sudden jerk is thrown on the tow line, often causing the line to part. In the case of a heavy tow, it has happened that this sudden jerk on the line has pulled the stem completely out of the boat

PART TWO

"P"

MARLINESPIKE SEAMANSHIP
CORDAGE

PART TWO.

"P."

MARLINESPIKE SEAMANSHIP.

CORDAGE.

Q. What is marlinespike seamanship?

A. It comprises a knowledge of knotting, splicing and seizing.

Q. How can it best be learned?

A. It can be learned only by practice.

Q. What is meant by splicing?

A. Joining ropes together by uniting their strands.

Q. What is meant by seizing?

A. Binding two parts of a rope together with spunyarn or marline.

Q. What kinds of seizings are there?

A. ROUND SEIZING.—Has two layers of marline. Upper called "riders."

FLAT SEIZING.—Has no riding turns.

THROAT SEIZING.—Seizes one or two parts of a rope together that cross.

Q. What is worming a rope?

A. Filling up the divisions between the strands (called the lay) by passing spun yarn along in it. Requires about one and one-half times the length of the rope.

Q. What is parcelling?

A. After a smooth surface has been obtained by worming, strips of old canvas or sheeting are wrapped around the rope; this is called "parcelling." The edges overlap like shingles on a roof to shed water. For wire rope use sheeting coated with red lead and linseed oil instead of tar.

Q. What is serving a rope?

A. After parcelling to keep the water out, the rope is served with marline or spun yarn, by wrapping the latter in a complete layer around the rope. This protects it from chafe and from the weather, and makes a neat finish.

"Worm and parcel with the lay;
Serve and marl the other way."

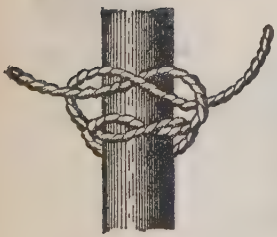
Q. What marlinespike work should every ordinary seaman be able to do?

A. He should be able to make the following knots and splices with absolute accuracy. It is better to learn a few knots perfectly than, at the start, to attempt to remember a long list of them. Constant practice is necessary to learn these knots.

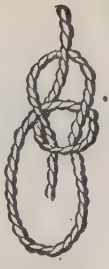
1. Knot a rope yarn. Use; for uniting rope yarns without using a large knot.
2. Overhand knot.
3. Figure of 8 knot. To keep gear from unreeving through a block.
4. Reef, or square knot. For tying reef points and bending ropes together.
5. Bowline knot. Various uses; it does not slip.
6. Running bowline. A bowline made around the standing part.
7. Bowline on a bight. Used to sling a man over the side.
8. Clap a jigger on a rope.
9. Stopper a rope. To hold it while it is being belayed.
10. Belay a boat fall. So the boat can be safely lowered.
11. Belay a rope to a cleat.
12. Half hitch.
13. Clove hitch; ratlines are hitched to shrouds in this way.
14. Timber hitch. For towing spars.
15. Round turn and half hitch. Bending a line to an anchor.
16. Blackwall hitch. Securing hook to bight of rope.
17. Cat's paw. Used for same purpose as the blackwall hitch.
18. Sheep shank. For shortening bight of a rope.
19. Rolling hitch. For bending a line to a spar; it does not slip.
20. Make an eye splice in a three stranded rope.

Over-hand knot.

Figure-of-eight knot.



Reef or square knot.



Bowline.

Running bowline.

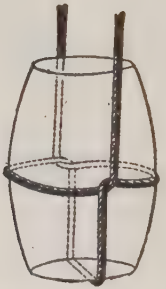
Bowline on a bight.

Half hitch.

Two half hitches.

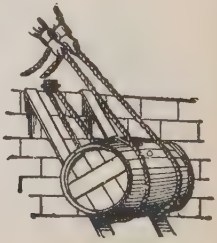
Hogshead sling.

Sling a cask, head up.



Sling a cask, head up.

Bale sling.



Parbuckle.

Timber hitch.

Round turn and half hitch.

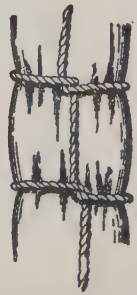
ve hitch; or ratline hitch.

Timber and half hitch.

Sheep shank.

ckwall tch.

Catspaw.



Marling hitch.

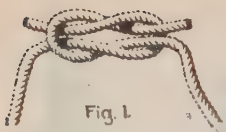


Fig. 1.
Square or Reef Knot.

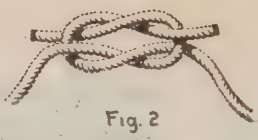


Fig. 2
Granny Knot.

Fig. 3
Sheet or Becket Bend Single.

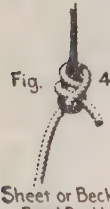


Fig. 4.
Sheet or Becket Bend Double.

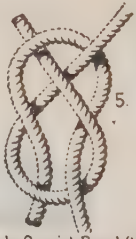


Fig. 5.
Single Carrick Bend (1.)

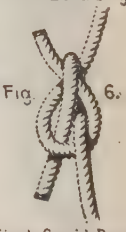


Fig. 6.
Single Carrick Bend (2.)

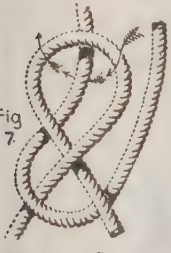


Fig. 7
Double Carrick Bend (1.)

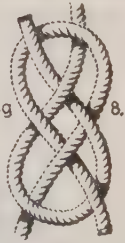


Fig. 8.
Double Carrick Bend (2.)

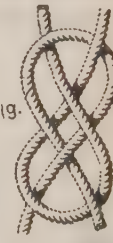


Fig. 9
Double Carrick Bend.
(2nd Method)

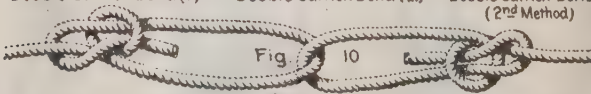


Fig. 10
Two Bowlines

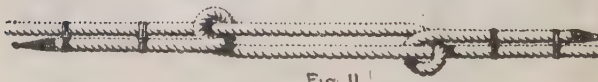


Fig. 11.
Reeving-Line Bend.

BENDING TWO ROPES TOGETHER.

Reproduced from Knight's "Modern Seamanship," by permission.

21. Make a short splice in a three stranded rope.

22. Make the following seizings: Round seizing, throat seizing, flat seizing.

23. Marling hitch; used in lashing hammocks.

Q. How many varieties of ROPE are used in the Navy?

A. Four: Hemp, manila, wire and hide. Hemp is made from the fiber of the hemp plant; manila from the fiber of wild banana; wire from iron or steel wire with heart of hemp; hide from strips of green hide.

Q. What are the qualities of HEMP ROPE?

A. It is strong and durable, but not so pliable as manila rope. Hemp is obtained from Russia, the Philippines, and America. The best comes from the Philippines. American hemp is used for marline and hand spun cordage. Ordinary hemp ropes are tarred for preservation; consequnetly, they are dark in color. Untarred hemp rope is called "white rope," or whiteline; it is used for log and lead lines. Hemp is used for sheets, bolt ropes and standing rigging.

Q. What is MANILA ROPE used for?

A. Hawsers and running gear. It is lighter than hemp, more pliable, and it does not require tar to preserve it. Large manila hawsers are tarred.

Q. What is hide rope used for?

A. Chiefly for wheel ropes; but now these are generally of pliable wire.

Q. What is WIRE ROPE used for?

A. For nearly all purposes where strength and lightness are requisite. For example, standing rigging, block straps, hawsers.

Q. What is small stuff?

A. A term applied to small rope; it is specified by the number of yarns.

Q. What is spunyarn?

A. It is made of "long tow" of hemp, twisted up loosely and tarred and rubbed to keep it from opening. The threads are twisted right handed and laid up left handed. It is known as 2 and 3 yarn spunyarn.

Q. What is seizing stuff?

A. Hambroline, houseline, marline, 4, 6, 9, or 12 thread seizing stuff. They differ in the number of the threads, and in the fact that some are right handed, others left handed.

Fig. 1.
Studding Sail Tack Bend.

Fig. 2.
Studding-Sail
Halliard Bend.

Fig. 3.
Fisherman's Bend.

Fig. 4.
Timber Hitch.

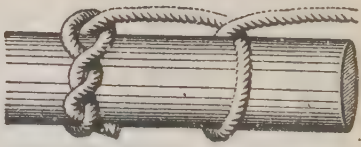


Fig. 5.
Timber and Half Hitch.

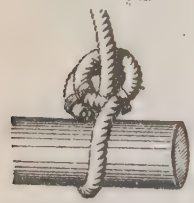


Fig. 6.
Inside Clinch.

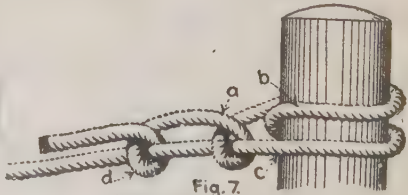


Fig. 7.
Round Turn and Two Half Hitches.

Fig. 8
Half Hitch.

Fig. 9.
Two Half Hitches.

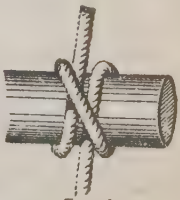
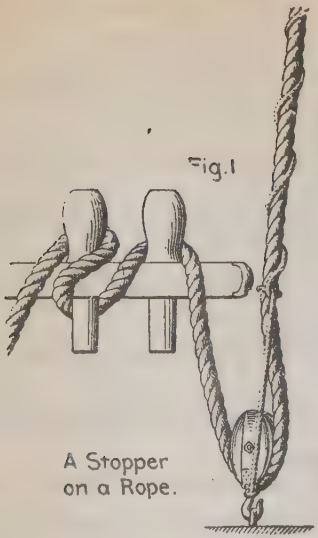


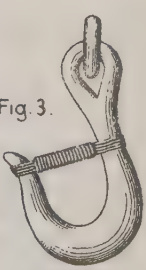
Fig. 10.
Clove Hitch.

BENDING A ROPE TO A POST OR SPAR.

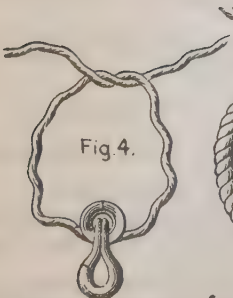
Reproduced from Knight's "Modern Seamanship," by permission.

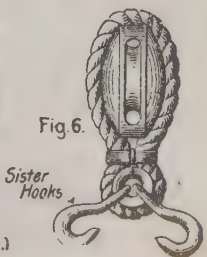


Strap on a Rope.
(For Hooking a Tackle.)



Mouse a Hook.





A STOPPER ON A ROPE, HOOKING A TACKLE, ETC.

Reproduced from Knight's "Modern Seamanship," by permission.

Q. How is small stuff measured?

A. All except ratline stuff by the pound; ratline stuff by the fathom.

Q. What is junk and for what is it used?

A. Pieces of condemned rigging and old rope. If it is untwisted and picked to pieces, it makes oakum that may be used for caulking decks.

Q. How is a rope formed?

A. It is formed of strands, which, in turn, are formed of rope yarns.

Q. What is rope yarn?

A. It is composed of fibers of hemp or manila twisted up right handed; it will bear about 100 pounds.

Q. What is a strand?

A. A combination of rope yarns laid up left handed (usually).

Q. What is a plain laid rope?

A. Three strands laid, or twisted up, forming a right handed rope.

Q. What is a cable laid rope?

A. Three plain laid ropes are taken and laid up left handed —nine strands.

Q. What is a four stranded rope?

A. Four strands laid up right handed, with heart in center.

Q. What is the heart?

A. A small soft pliable rope, one-third the size of the strand. It keeps the rope in proper shape.

Q. What is a back hand rope?

A. A left handed rope. The strands are right handed; the yarns are left handed. It is very pliable.

Q. What is tapered rope?

A. The part that bears the strain is large, and it tapers down to the hauling part which is light and pliable.

Q. What is bolt rope?

A. The rope used around the edge of sails or awnings.

Q. How is manila rope laid up?

A. It is laid up in 3 strands up to 3-inch circumference, inclusive, but above that it is 4-stranded.

Q. What types of wire rope are used in the Navy?

A. 1. Type A, galvanized cast steel, 6 strands, hemp center, 7 or 19 wires to the strand, according to flexibility desired. The strongest and most durable rope made.

2. Type AA, galvanized cast steel, 8 strands, hemp center, 19 wires to the strand. Not so durable, but more flexible than A.

3. Type BB, galvanized cast steel, 6 strands, hemp center, 30 wires to the strand. Not so durable as A or AA, but has greater flexibility than either of them.

4. Plow steel, not galvanized, 8 strands laid up in graphite, hemp center, 19 wires to the strand. Great strength combined with flexibility.

Q. HOW MEASURE THE SIZE OF A ROPE?

A. By its *circumference* in inches; length is always referred to in *fathoms,* not in feet.

Q. How many feet in a fathom?

A. Six.

Q. In what form is a new rope received from the place of manufacture, or "rope walk?"

A. In a coil of from 50 to 150 fathoms, depending on the size of the rope. To uncoil it, the end should be taken through the coil, and coiled down against its lay in order to get the turns out.

Q. What is done before stowing ropes or hawsers below?

A. They are thoroughly dried to prevent rot and mildew.

PART TWO

"Q"

THE DUTIES OF LOOKOUTS, AND OTHERS SPECIALLY DETAILED
THE WATCH IN PORT AND AT SEA

PART TWO.

"Q."

THE DUTIES OF LOOKOUTS, AND OTHERS SPECIALLY DETAILED.

THE WATCH IN PORT AND AT SEA.

I. AT SEA.

Q. What are the duties of the MASTHEAD LOOKOUTS?

A. From sunrise to sunset there is always stationed in a searchlight platform forward, or in the foretop, a lookout whose duty it is to report vessels, land, rocks, shoals, discolored water, buoys, beacons, lighthouses, floating objects, or anything else of interest.

Q. If detailed as a lookout, how do you report a sail or land sighted?

A. "Sail Ho!" or "Land Ho!"

Q. How does the officer of the deck acknowledge your report?

A. "Where Away?"

Q. What reply do you give?

A. Give relative bearing of the object from the ship; for example, "Broad on Starboard Bow, Sir;" "Two points Abaft Port Beam, Sir," or whatever the bearing of the object may be. (See diagram of relative bearings, page 102.)

Q. What are the GENERAL ORDERS FOR LOOKOUTS and other men on stations?

A. 1. Be alert and attentive.

2. Do not give your attention to anything but your own special duty.

3. Remain at your station until you are regularly relieved.

4. Keep on your feet, and do not lounge.

5. Do not talk with others except as required by your duty.

6. When making a report, speak out loud and distinctly.

7. Repeat a hail or a report until it is acknowledged by the officer of the deck.

8. When you are stationed, *be sure that you understand*

what you are supposed to do. If you don't understand your duty, ask the petty officer who stations you.

9. Remember that, no matter what your station, your duties are important and most necessary. According to the manner in which you perform your duty, you may make yourself of great assistance, or absolutely worthless to the officer of the deck.

Q. What lookouts take the place of the masthead lookout at night?

A. The BRIDGE LOOKOUTS. They are stationed at the ends of the bridge, from sunset to sunrise.

Q. What are their duties?

A. Keep lookout from abeam to ahead for lights, vessels, buoys, fog signals, whistles, bells, or anything else of importance or interest; and report when they are seen or heard. Each bridge lookout also keeps watch on the side light on his respective side, and reports immediately if it burns dim or goes out. Whenever the ship's bell strikes, these lookouts pass the hail; the starboard lookout sings out "Starboard bridge, bright light," then the port lookout reports "Port bridge, bright light." One of the bridge lookouts will be instructed to report "Masthead, bright light."

Q. What are the duties of the LIFE-BUOY LOOKOUTS?

A. Let go the life buoy when the officer of the deck, or other officer or petty officer, orders it let go. If the lookout sees a man fall overboard or a man in the water, on his side, he should let go the buoy, and call "Man Overboard!" As soon as the buoy is let go, lookouts should endeavor to keep man in sight. The precautions to be observed in letting go the life buoy are given in Part I, as everyone on board ship should know how to let go the life buoy. At night the life buoy lookouts also report running lights. Starboard lookout reports stern light; port, the flag light. After bridge has reported, they report in order, "Starboard quarter, bright light;" then "Port quarter, bright light."

Q. What are your duties if you are detailed for a watch at the port, or starboard SPEED CONE?

A. A speed cone is a canvas cone painted red or yellow, 2½ feet at the base by 3 feet high; its purpose is to indicate to the various vessels of the fleet in formation the actual speed that a ship's engines are making. The cones are hoisted at the fore yardarms of vessels in formation. The different positions of the speed cone indicate as follows:

Point up.

1. All the way up to the yardarm: "Going ahead at standard speed."

2. About two-thirds way up to yardarm: "Going ahead at two-thirds standard speed." (The cone should show above the smoke pipes.)

3. About one-third way up to yardarm: "Going ahead at one-third standard speed." (Cone should show well clear above semaphores, etc.)

Point down.

1. Hoisted part way to yardarm: "Engines backing."

2. All the way up to yardarm: "Engines backing full speed."

The cone lowered out of sight: "Engines stopped."

If you are detailed for a watch at the speed cones, you must remember the following points:

1. UPON YOUR ACCURATE AND PROMPT EXECUTION OF YOUR ORDERS IN REGARD TO THE SPEED CONES DEPENDS, IN GREAT MEASURE, THE ACCURATE POSITION OF THE SHIPS ASTERN OF YOURS IN FORMATION; therefore, your duties are most important, and you must handle the cone smartly, and not in a careless or perfunctory manner.

2. IF YOU ARE SLOW, OR CARELESS, IN THE PERFORMANCE OF YOUR DUTY, YOU MAY BE DIRECTLY RESPONSIBLE FOR A COLLISION.

Q. On which side is the cone hoisted?

A. On the weather side, clear of smoke.

Q. What precaution is taken when changing the place of hoist of speed cone?

A. Ships shall not change the place of hoist of the speed cone during an evolution, and when changing, the first cone is not to be started until the second one is hoisted to its place.

Q. Does a ship ever use two speed cones?

A. Yes; the senior officer may direct the use of two speed cones, one on each side, when in column formation, in getting underway, or coming to anchor, or when engaged in tactical drills. If the flagship hoists a second cone, other vessels shall do so without further orders. The speed cone may be dispensed with entirely by the senior officer when at sea in open water. This is done by signal.

Q. How indicate: "Going ahead 1 knot, or more, faster than standard speed?"

A. By breaking full speed pennant (red pennant) at yardarm next to speed cone (point up).

Q. What are your duties if you are detailed to go on watch at the NIGHT SPEED INDICATOR, or speed lights?

A. The night speed indicators consist of a double electric lamp at the main truck, showing red or white. The meanings are as follows:

WHITE LIGHT.

Steady light: "Going ahead at standard sped."

Single flashes: "Going ahead at one-third standard speed."

Double flashes: "Going ahead at two-thirds standard speed."

RED LIGHT.

Steady light: "Stopped." (In emergency, toots for 10 seconds with steam whistle also.)

Single flashes: "Engines backing." (In emergency, three blasts with steam whistle also.)

Double flashes: "Engines backing full speed. (In emergency three blasts with steam whistle also.)

The controller for the speed light is located on the conning platform. By leaning against the controller, it is possible to switch a light on, or off, without orders; you would thereby become responsible for throwing the ships astern of yours out of proper station, *even if you did not cause an actual collision.* Therefore, NEVER LEAN AGAINST THE TRUCK LIGHT CONTROLLER; keep on your feet and alert. NEVER TOUCH THE CONTROLLER WITHOUT A DIRECT ORDER FROM THE OFFICER OF THE DECK.

Q. What are your duties if you are stationed at the BREAK DOWN FLAG?

A. The break down flag, the international "I," (See page 244), is kept rounded up at the foremast of a ship in formation, ready to break in case of accident to machinery or steering gear. Also, in case of man overboard, the flag is broken and lowered part way, but not below the level of the smokestacks. During daylight, a man is stationed at the halliards of this flag, ready to break it when ordered to do so by the officer of the deck. He must also keep watch to see that the flag does not blow out of its own acord.

Q. What are your duties if you are stationed at the ENGINE ROOM TELEGRAPH?

A. On each side of the conning platform is an instrument called an engine room telegraph; its purpose is to communicate to the engine room the orders of the officer of the deck in regard to speed. The telegraph is circular in shape, and the various sectors are marked "Full speed," "Standard speed," "Two-thirds speed," "One-third speed," Ahead: "Stop;" "Slow speed," and "Full speed" Astern. A lever fitted with an indicator travels over the circumference of the circular face of the instrument. If you are stationed at the engine room telegraph, your duty is to move this lever to indicate the speed designated by the officer of the deck, and see that the answering pointer on the instrument moves to indicate the

same speed; this shows that the engine room has received and understood the signal. If the signal is not answered instantly from the engine room, move the lever again, bearing in mind the fact that you must use a little muscle in order to operate the lever properly; if the engine room still fails to answer, report immediately to the officer of the deck. IT IS MOST IMPORTANT THAT EVERY SIGNAL FOR A CHANGE OF SPEED GOES TO THE ENGINE ROOM THE INSTANT IT IS ORDERED. If you are detailed for a watch at the engine room telegraph, don't be afraid to ask questions; be sure that you understand your duties, for the safety of the ship may depend upon the promptness and accuracy with which you execute orders. NEVER LEAN AGAINST THE TELEGRAPHS; AND NEVER TOUCH THEM WITHOUT ORDERS FROM THE OFFICER OF THE DECK.

II. EXTRA LOOKOUTS AT SEA IN A FOG.

Q. What are your duties if you are stationed at the FOG WHISTLE?

A. In fog, mist, falling snow, or heavy rain storms, whether by day or night, a steam vessel having way upon her is required to sound, at intervals of not more than two minutes, a prolonged blast (4 to 6 seconds' duration) of the fog whistle. A steam vessel under way, but stopped ,and having no way upon her, is required to sound, at intervals of not more than two minutes, two prolonged blasts, with an interval of about one second between.

If you are detailed for the fog whistle, report on the conning platform immediately, and carry out any instructions that may be given you. Remember that if you are not strictly attentive to duty, you may be directly responsible for a collision.

Q. What other lookouts are usually posted in a fog, whether by day or by night?

A. 1. Starboard Bow. Watch position buoy of ship ahead, and lookout starboard bow.

2. Port Bow. Watch position buoy of ship ahead, and lookout port bow.

3. Bridge Lookout, from ahead to abeam, starboard.

4. Bridge Lookout, from ahead to abeam, port.

5. Starboard Quarter and astern, to watch a ship's own position buoy, and keep lookout aft.

6. Port Quarter and astern, to watch a ship's own position buoy, and keep lookout aft.

7. Foretop lookout.

These lookouts are to report immediately if any land, vessel, buoy, or anything else is sighted; or if any bell, whistle, gun, or other sound is heard. Reports will be made by speaking tube, or by telephone to the bridge, or by singing out, when urgent.

Q. What is the POSITION BUOY or TOWING SPAR?

A. When cruising in formation during a fog, a towing spar, or position buoy is used by each ship. Unless orders are given to the contrary, the spar is towed at a distance of 490 yards astern of a vessel's bow. This is the prescribed distance when ships are steaming in formation at 500 yards' distance. The line is usually marked by a colored rag which serves to indicate when a sufficient length of line has been paid out. When this rag comes to the taffrail, the towing spar should be in proper position astern. As a rule, a petty officer and two men handle the spar and line. The petty officer gives the proper orders for handling the spar; the main point to remember is that the line must be reeled in promptly, without waiting for orders, in case a vessel backs, or the line is liable to be cut. A searchlight is kept turned on the spar by day and by night, and the next ship astern in formation gauges her proper distance from the position of the towing spar of the vessel next ahead. Lookouts are posted as mentioned above to keep watch on the towing spar of their own vessel and that of the ship next ahead.

III. IN PORT IN FOG.

Q. What signal is used in place of the whistle when a vessel is at anchor in fog, mist, falling snow, or heavy rain storm?

A. The ship's bell is rung rapidly for about 5 seconds, at intervals of not more than one minute. A man is detailed for this watch at the fog bell; his duties are explained to him, and he must carry them out carefully and conscientiously.

IV. AT SEA AND IN PORT.

Q. What are the duties of a MESSENGER?

A. A seaman, second class, is usually detailed as messenger. He carries messages for the officer of the deck. He must familiarize himself with the correct names of the various parts of the ship, and with the names and duties of various officers and petty officers so that he may be able to carry messages intelligently; he must also know thoroughly the customs of the service, as he will often be thrown on his own resources. In

carrying a message he should always MOVE ON A RUN. If called upon to strike bells, he should strike them quickly and sharply, man-of-war style. In carrying messages he should know, before leaving, exactly what it is intended that he should say, and he should deliver the message in the exact words it is received from the officer of the deck. When the officer of the deck leaves the quarter deck, the messenger should follow him at a short distance in order to be ready if needed. Under way the messenger's station is on the conning platform; in port it is the quarter-deck, where, in addition to his regular duties, he can be of great assistance in performing small jobs, tending boat lines, for example; as a rule, he is charged with scrubbing gangways during the morning watch. The messenger should be in exact uniform at all times and pay particular attention to the neatness of his personal appearance. He must remember that he may be of very valuable assistance to the officer of the deck if he carries out his orders quickly and intelligently. Messengers are very often detailed for the service of the various heads of departments; their duties are of the same general nature as the duties of the officer of the deck's messenger. All messengers will obey the following general rules:

1. Be in uniform of the day from 8.00 a. m. until 9.00 p. m.
2. Be attentive to calls.
3. Carry messages on the run, return at once to the sender, and report that the message has been delivered.
4. If unable to deliver a message, report the fact to the sender *at once*.
5. A messenger sent to an officer's room will knock, or speak the officer's name, until answered, but will not enter the room nor open the door, or curtain, until told to do so.
6. Obtain permission before going to meals or going to the head.

Q. WHAT ARE THE GENERAL ORDERS FOR SENTRIES ON POST?

A. 1. Memorize the following: "My general orders are:

(a) To take charge of this post and all Government property in view.

(b) To walk my post in a military manner, keeping constantly alert, observing everything that takes place within sight or hearing.

(c) To report every breach of orders or regulations that I am instructed to enforce.

(d) To quit my post only when regularly relieved.

(e) To receive, obey and transmit orders from the commanding officer, executive officer, the officer of the deck, or

the officer, noncommissioned officer, or petty officer of the guard.

(f) To hold conversations with no one, except in the proper discharge of my duties.

(g) In case of fire give the alarm, quitting my post if necessary to do so.

(h) To allow no one to commit a nuisance in the vicinity of my post.

(i) In any case not covered by instructions, to call corporal or petty officer of the guard.

(j) To salute all officers.

(k) At night to exercise the greatest vigilance."

2. When calling for any purpose, challenging, or in communication with any person, take the position of "port arms."

3. A sentry on post will not quit his piece, except on an explicit order from some officer, noncommissioned, or petty officer from whom he lawfully receives orders; under no circumstances will he yield his piece to any other person.

4. Report at once to the corporal or petty officer of the guard every unusual or suspicious event noticed.

5. Between 8.00 a. m. and sunset the sentries at the gangways shall salute all officers in uniform when going or coming over the side. All sentries on the upper decks, or in view from outside, shall salute all commissioned officers passing them close aboard, in boats or otherwise.

6. Sentries carrying rifles salute all commissioned officers by coming to "present;" they salute warrant officers with the rifle salute. Sentries without rifles render the hand salute to all officers.

7. When relieved, a sentry will repeat in detail to his successor all special orders relating to his post.

Q. What must a sentry remember in addition to these general orders?

A. The various posts require certain special orders. Before relieving, a sentry must make sure that he understands the special orders of his particular post; such special orders are usually posted in the vicinity of the post. Sentries may be detailed for the following posts: the gangways, life buoys, brig, ammunition passage, forecastle and elsewhere that their services are required.

Q. WHAT ARE THE DUTIES OF AN ORDERLY?

A. The following rules are given as typical instructions for the captain's orderly; instructions for other orderlies differ only in minor details.

1. Remain at all times in the vicinity of the cabin door, unless sent away on a message by the commanding officer.

2. Accompany the commanding officer whenever he leaves the cabin, unless otherwise directed by him.

3. Never start on a message without a thorough understanding of what is desired. The same applies in delivering a message to the commanding officer.

4. Allow no one to enter the cabin door other than the executive officer or the navigator, without being announced.

5. All messages from the bridge or the wireless room must be delivered to the commanding officer without delay, regardless of the hour, unless he has given orders to the contrary.

6. Carry out general orders for sentinels on post.

7. Allow no one except the gunner to take the keys to the magazines from the cabin without special authority from the commanding officer. Report to your relief how many magazine keys are out, and, at 8.00 p. m., report to the commanding officer whether or not all the magazine keys are in their places.

8. Turn the order book over to your relief in the presence of the corporal of the guard.

9. When visitors are allowed on board, do not permit them to loiter in the vicinity of the cabin. Give necessary instructions courteously, but firmly.

It must be noted that these orders are merely typical ones; they may vary somewhat on different ships.

V. IN PORT.

Q. Who are SIDE BOYS?

A. Ordinary seamen are detailed, as a rule, as side boys. One pipe of the boatswain's whistle means two side boys; two pipes, four; three pipes, six; and four pipes, eight. The number of side boys ordered to tend the side varies with the rank of the officer coming on board or leaving the ship. On hearing the pipe, the side boys come to the gangway on the run and are stationed by the boatswain's mate. When an officer leaves the ship, or comes on board, they salute with the right hand, remaining at the salute while the side is being piped. They do not leave their stations until the boatswain's mate has finished piping the side.

Q. What are the duties of SIDE CLEANERS?

A. Certain men from each division are detailed as side cleaners; and upon their proper attention to duty depends, in great measure, the neat and trim appearance of the ship. The

following instructions, in general, regulate the duties of side cleaners:

1. They are to go over the side not later than 6.00 a. m.

2. They will come in from over the side at 9.00 a. m., bringing all stages, pots, buckets and lines, and will then shift into uniform for quarters, unless they are specially excused.

3. They are not allowed over the side after morning quarters (except after coaling) without permission from the division commander.

4. They must attend all drills and inspections of their divisions, unless they are specially excused by the executive officer.

5. No private gear is to be kept in side cleaners' lockers except clothing for use over the side.

6. While over the side, wear working dress, preferably white; *uniform must be whole and at least fairly clean. No mixed uniforms will be allowed; uniform must not be torn or mutilated.* Side cleaners will not be allowed to wear jumpers with the sleeves cut out.

7. After coming in from over the side, shift into the uniform of the day immediately.

8. No stage, line, or paint pot is to be left hanging over the side when not actually in use, even for only a few minutes.

9. Punts must be hoisted in when they are not in use; regular side cleaners keep them clean.

10. Entering port, the side cleaners are usually excused from work in their part of the ship one hour before anchoring in order to allow them time to shift into working rig, get stages ready, and stand by to go over the side as soon as the anchor is let go.

11. These instructions are merely typical; they are subject to any change or addition that may be made on any ship.

Q. WHAT IS THE ANCHOR WATCH?

A. It is a detail of men made out daily, in port, by the executive officer's yeoman. These men are on watch during the night.

Q. How is the anchor watch divided?

A. Into two equal parts. The first part takes the watch from 9.00 p. m. till 1.00 a. m., and the second part from 1.00 a. m. till "all hands." As a rule, there are 8 men in the detail, and each man has an hour's watch, except in case of emergency, when the whole watch may be turned out.

Q. What are the duties of the anchor watch?

A. The men are detailed for any work that may be necessary during the night. They would man a boat, cover skylights, slack off the rigging, veer chain, or do any other work they

might be directed to do. A petty officer is generally in charge of each part of the anchor watch. The officer of the deck usually keeps one of the watch on his feet for messenger duty, and permits the other members of the watch to TURN IN, PROVIDED THEY USE THE BILLETS REGULARLY ASSIGNED TO THE ANCHOR WATCH and HOLD THEMSELVES IN READINESS TO OBEY A CALL PROMPTLY. It is *a very serious offense for a member of the anchor watch to sleep off his regularly assigned billet;* it causes confusion in calling the anchor watch, and it is evident that the watch would never be assembled in time to meet an emergency provided they were sleeping in different parts of the ship. The members of the watch relieve each other about every hour, but because they are allowed to turn in they are in no sense relieved from the responsibility of obeying a call the instant they are aroused.

Q. How do you know when you are detailed for the anchor watch?

A. The petty officer in charge of your part of the ship should notify you of the detail; his failure to do so will not excuse your absence from the muster of the anchor watch. This duty is assigned to the men of a section in rotation; consequently, you should have a good idea of about when your next tour of duty comes around; and, in any event, the anchor watch list is always posted on the bulletin board early in the day. Before going on liberty you should make it a rule to consult this list; in fact, the only safe rule is to make a practice of looking at this list every day. At 8.00 p. m. the word is passed throughout the ship; "Lay aft the anchor watch to muster." If you fail to be present at muster, you will probably find yourself detailed to stand two watches instead of one; likewise if you are late, you will be disciplined. *Failure to hear the word is no excuse;* you know that you are detailed for the anchor watch, and that the anchor watch is mustered at 8.00 p. m.; therefore, you, yourself, must keep track of the time and lay aft on the quarter-deck promptly at 8.00.

Q. What is done after the anchor watch is mustered at 8.00 p. m.?

A. Each man finds out who his relief is, and where he swings. When all are present, have received any necessary instructions, and when each man has learned who his relief is, the officer of the deck allows the watch to fall out and stand by for the call, at 9.00 p. m., "Lay aft the first anchor watch." On hearing this word—or, in any event at 9.00 p. m.—the first anchor watch lays aft and reports to the officer of the deck. If the anchor watch wishes to leave the quarter-deck

at any time, he must always obtain the necessary permission from the officer of the deck; likewise, he must obtain such permission before calling his relief. Under *no circumstances shall the anchor watch turn in until he and his relief have reported to the officer of the deck.*

Q. What lifeboat duties has the anchor watch?

A. From 9.00 p. m. until "Turn to" in the morning, the anchor watch will stand by for a call to man the lifeboat. When the anchor watch is mustered, the coxswain, or petty officer in charge, will assign each man his station in the lifeboat, and report to the officer of the deck that the crew has been detailed and that the lifeboat is ready for use. Owing to its handiness, and the number of men available as a crew, a dinghy is well suited for use as a lifeboat in port in good weather, and under such conditions, it may be designated as the lifeboat for port service.

VI. THE WATCH AT SEA.

Q. WHAT GENERAL RULES GOVERN THE WATCH ON DECK WHEN THE SHIP IS UNDERWAY?

A. The watch is usually stood by the sections of the various divisions; each section takes a four-hour watch, in rotation. During the night watches, there is, as a rule, very little to do; consequently, men not at work, and not on lookout are usually permitted to lie down on deck, each division in its own part of the ship. *It is a very serious offense for one of the section on watch to go below for any purpose without permission from the petty officer in charge of his section.* Permission for men of the section on watch to lie down on the main deck is not a right, but a privilege; and if, for any reason, difficulty is experienced in getting men up promptly, they should be kept on their feet. Never forget that, on a night watch, you are just as much on duty as you are during any other watch, and that you are simply permitted to lie down and sleep when there is nothing for your section of the watch to do. When you are permitted to lie down on the main deck while your section is on watch—and when you are on deck at any other time—remember the regulation to

KEEP OFF THE ENGINE ROOM, FIRE ROOM AND DYNAMO ROOM HATCHES.

PART TWO

"R"

DECK SEAMANSHIP

PART TWO.

"R."

DECK SEAMANSHIP.

DEFINITIONS OF SEA TERMS AND EXPRESSIONS.

ABACK.—A sail is aback when the wind acts on its forward surface.

ABAFT.—Behind; in the rear of; on the after side.

ABAFT THE BEAM.—Astern of a line forming a right angle with the keel.

ABEAM.—Opposite the center of the ship's side, or 8 points from bow and stern.

ABOARD.—On the ship.

ABOUT.—To "go about" is to change the course of a ship or boat under sail from one tack to another.

ALEE.—The tiller is alee when it is pointing to leeward; tiller down.

ALL HANDS.—The entire ship's company.

ALOFT.—Overhead; in some part of the rigging.

ALONGSIDE.—Close to the ship's side.

ANCHOR.—To let the anchor go to hold the ship in her assigned position.

ANCHORAGE.—Ground fit to anchor on; a berth for the ship.

ASHORE.—On land; also applied to a ship when aground.

ASTERN.—Behind the ship.

AVAST.—To stop; to cease hauling.

BARE POLES.—A ship is under bare poles when she is under way without sail set.

BATTENS.—Strips of wood such as those nailed or secured over the tarpaulins of a hatch to batten down in bad weather; also strips of wood fastened to spars to take chafe of gears; chafing battens.

BEARING.—The direction an object bears from the ship; either the compass direction or direction referred to the ship's heading.

BEATING TO WINDWARD.—Sailing a vessel so that the final course made good is in the direction from which the wind comes; by tacking or wearing.

BECALMED.—No wind to fill the sails.

BEAR-A-HAND.—Hurry up.

BELAY.—Make fast fast by belaying; to make fast, secure, or even stop.

BERTH.—An anchorage. A station. A sleeping billet.

BRIG.—Where prisoners are confined on board men-of-war.

BOARDING.—The act of going on board a vessel, either for the purpose of getting information, or of extending courtesies.

BOUSE.—To haul on.

BULKHEADS.—Partitions in a ship.

BETWIXT WIND AND WATER.—That portion of a vessel about the waterline which, when the vessel rolls, is alternately above and below water.

BY THE BOARD.—Over the side. A mast goes "by the board" when it carries away.

BLOCK AND BLOCK.—When the two blocks of a tackle have been hauled together by hauling on the tackle; also called "two blocks."

BOAT CLOAK.—A cloak used by officers in a boat.

BOAT CLOTH.—A large cloth spread out on the stern-sheets of a boat for the use of officers.

BY THE HEAD.—A term applied to a vessel when she is deeper forward than aft.

BY THE STERN.—Applied to a vessel when she is deeper aft than forward.

CALL.—A pipe, or whistle, used by the boatswain or his mates in calling all hands for any purpose, or in passing orders.

CANTED.—Turned from its square position or state. Inclined to one side.

CAST.—To pay a vessel's head off and bring the wind on the desired side, as to "cast to port."—To take a sounding, or cast the lead.

CATCH A CRAB.—Catching an oar in the water the wrong way while rowing.

CAT'S PAW.—A light air causing a ripple on water for a few minutes.

CHOCK-A-BLOCK.—Full; filled to the extreme limit.

COASTER.—A vessel engaged in running up and down the coast.

COCKBILL.—A yard is cockbilled when one yard-arm is cocked up above the other; an anchor, when hanging by ring-stopper up and down.

CHECK.—To ease off.

CLAP ON.—To take hold of.

CLAMP DOWN.—To wash down the decks by use of wet swabs and squilgees, when undesirable to put much water on the deck.

CALL THE WATCH.—To call the men who are to relieve the watch on deck.

CHAFE.—To rub and wear.

CLEAR-FOR-RUNNING.—A rope so laid down that it can run through leading blocks without danger of fouling.

DOG VANE.—A small wind vane placed on truck or above rail.

DERRICK.—A spar supported by guys and a topping lift, with a purchase for hoisting heavy weights made fast to it.

DISMANTLE.—To unrig a vessel and discharge all stores.

DOUSE.—To lower; to let down, as to "douse" sail.

END-FOR-END.—To shift one end of a rope to position occupied by the other.

FAKE.—One complete circle of a rope in a coil. A number of such turns make a tier, or sheave, and several tiers superimposed, a coil. "To fake a line" is to coil it down carefully, in opposition to "coil," which is to perform the work loosely or hastily.

FLATTEN IN FORWARD.—To haul the head sheets well aft and amidships.

FLAGSHIP.—The name applied to a vessel with the admiral's flag hoisted.

FLEMISH DOWN.—To coil down a rope in concentric coils, closely pressed together.

FORGING AHEAD.—Going ahead slowly.

FEND-OFF.—To bear off; to keep clear of.

FISH A MAST OF SPAR.—To secure it when broken, or weakened, by winding with rope or chain around pieces of wood or iron called fishes which are laid along the spar.

FULL DUE.—To secure permanently; secure for a full due.

FIELD DAY.—Day for general cleaning up of all parts of a ship.

FRESHEN-THE-NIP.—To set up again. To veer on the cable or pull upon a backstay to shift the chafe from a particular spot.

GRANNY'S KNOT.—A knot similar to a reef or square knot with the upper turns crossed the wrong way.

HAUL.—To pull on. Also applied to the wind when it is shifting.

HOLYSTONE.—A sandstone used in holystoning decks.

HEAVER.—A steel spike with wooden handle, used to heave strands in splicing.

HEAVE-TO.—To deaden a vessel's headway by bracing some of the sails aback. To stop a vessel under sail, without taking in sail.

LABOR.—To roll and pitch heavily.

LEND-A-HAND.—To assist; to aid.

LET-GO-BY-THE-RUN.—To let go all at once, as by throwing rope off a pin.

OFF-AND-ON.—Coming alternately near the land, and then standing off again.

OFFING.—Out at sea; well clear of the land.

OVERBOARD.—Outside of the ship.

OVERHAUL.—To take apart, thoroughly examine, and repair. To overtake.

PIPE DOWN.—A boatswain's call denoting the completion of an "all-hands" evolution and that you can go below.

PAINTER.—A rope in the bows of a boat by which she is made fast.

PASSING THE WORD.—Repeating an order or call so that it may be heard.

PALM AND NEEDLES.—Sewing instruments used in sewing sails or canvas.

PRICKER.—A small steel spike used by sailmakers for making eyelet holes.

RAKE.—The incline which most masts have toward the stern of the ship.

RELIEVING TACKLES.—Tackles used to assist, or take the place of the wheel ropes.

RIGHT.—To raise to an upright position.

RIDE.—To be held by the cable, as a vessel riding to her anchor.

ROUND IN.—To haul in, as "Round in" the main brace.

ROUSE IN.—To haul in the slack part of a cable or hawser.

RUN DOWN.—One vessel fouling or sinking another by running into her.

SCREW.—The propeller.

SCOTCHMAN.—A piece of iron with ring attached, seized to the shrouds.

SHEER OFF.—To shove off; to separate by altering course.

SHEERS.—Two or more spars raised at an angle, lashed and supported by guys, having purchases for raising masts or heavy weights.

SPAN.—A piece of rope or chain made fast at each end; between davit heads for instance.

SQUILGEES.—Wooden clamps holding a piece of rubber, used for drying decks.

STRIKE A MAST.—To lower it.

SWAB.—A mop of rope, or canvas yarns, used for drying decks.

SWAMP.—To sink by filling with water.

SCUTTLE.—To make holes in a ship's bottom to sink her; a round or square opening in deck.

SHIP.—To take on board. To enlist; to serve on board ship.

SHIVER.—To cause the sails to shake by the wind.

SLACK OF A ROPE.—The part that hangs loose.

SLEW.—To turn about.

STAND BY.—To be ready.

SWING.—A ship turns, or swings, to her anchor with the wind or tide.

SWING SHIP.—To head the ship successively on the various points of compass.

TAUT.—Tight.

TARPAULINS.—Canvas covers for hatches, for covering or protecting decks.

TRIM.—To arrange the vessel in desired position, as "Trim the boat."

TURN-THE-HANDS-TO.—To start all hands at work.

TURNBUCKLE.—A link with an adjustable screw for connecting two parts of a bar or a rod together; used on Jacob's ladders, ridge ropes, guys, etc.

UNSHIP.—To take anything from the place in which it is fixed.

VEER AND HAUL.—To veer on one part and haul on another, both connected to some spar or movable article; also applied to the shifting of the wind.

WATER-LOGGED.—When a vessel is so full of water as to be heavy and unmanageable.

WEATHER GAUGE.—To windward of; to get the better of.

WEIGH.—To heave an anchor out of the ground.

WIND A BOAT.—To turn her end for end, at a dock, for instance.

WIND-BOUND.—Detained by contrary winds.

WIND-FALL.—A rush of wind from a high land. A stroke of good luck.

YAW.—To deviate from a course. A vessel sometimes yaws back and forth in steering.

Q. WHEN SHOULD A BOAT COMING ALONGSIDE BE GIVEN A BOAT LINE?

A. In a strong tideway or wind, or when such a heavy sea is running as to prevent the bowman from holding on by his

boat-hook. The officer of the deck's messengers may often make themselves useful by tending boat lines promptly.

Q. HOW SHOULD A BOAT BE HOISTED?

A. After hooking on, the order is given, "Set taut; hoist away." Men should walk away briskly with falls married. Never let boat sag down after hoisting and while belaying. If the boatswain has his falls in good condition, and they have a fair lead, twenty-five men should be able to hoist a boat quickly. Boats not properly hoisted should be lowered and hoisted again.

Q. HOW ARE AWNINGS SPREAD?

A. Everything should be done by order, and together. If the awning is below, it should be brought up and placed on a stretch. At the order "Loose awnings," the stops are cast off, the awning falling from the backbone, which should then be tautened out by fore-and-aft tackle; and the earings are rove off and manned. If large spaces occur between earings, a stop about half way between earings should be lengthened and used as an earing. At the order. "Haul out the earings," they are hauled well out until the awning is flat, then everyone spreads along, and at the order, "Lay up and bring to," they lay up on rail, bring all stops taut and expend all ends; no wrinkles or hollows to be left. Lacings are passed. Everyone stays on the rail until the order, "Lay in," when all lay in together. Petty officer of part of ship has general supervision of his awning and does not lay up.

Q. What is a BLOCK?

A. A flat oval piece of wood containing one or more sheaves.

Q. What are blocks usually made of?

A. Ash, elm, iron or composition.

Q. How many parts are there to a block?

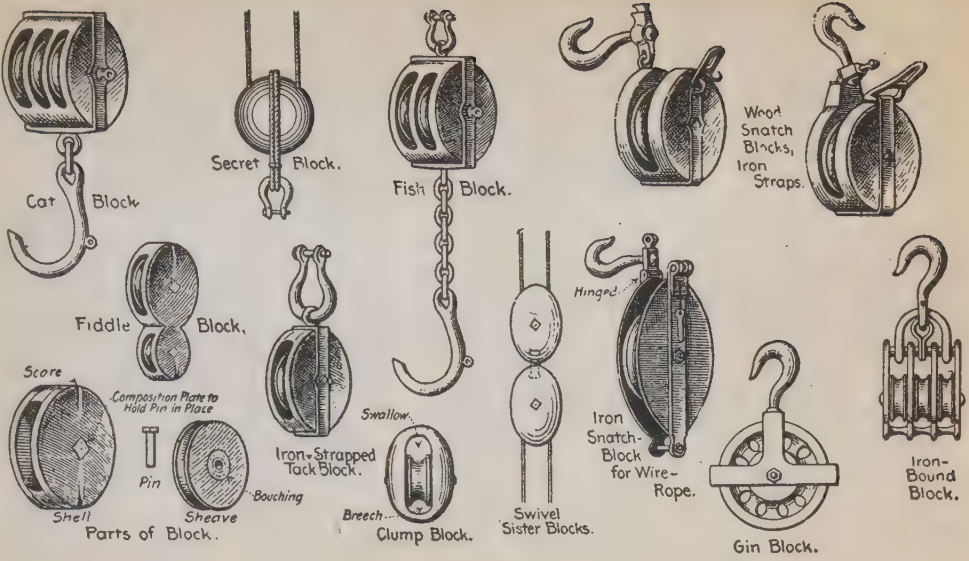
A. Four—the shell, or outside; the sheave, or wheel over which the rope passes; the pin, or axle on which the sheave turns; and the strap enclosing the shell, by which the block is secured. Blocks are either "*made*" or "*mortised*." The *made* block has a shell composed of several pieces pinned together. The *mortised* block has a shell all of one piece. In a common block the hole in the sheave for the pin is lined with composition. There are, however, *patent* blocks in which the hole in the sheave is fitted with rollers.

Q. What are the cheeks of a block?

A. The sides of a shell.

Q. What is the swallow?

A. The hole through which the rope reeves.



BLOCKS.

Reproduced from Knight's "Modern Seamanship," by permission.

Q. What are scores?

A. The grooves cut on the sides and one end of the block to allow the strap to fit in and hold block securely.

Q. What are the straps made of?

A. Rope and iron. The thimble and hook are attached to the strap.

Q. What is the becket?

A. It is a small becket, or grommet spliced into strap of block to which the standing part of a fall sometimes makes fast.

Q. How are blocks classed?

A. According to the number of sheaves; for example, single, double, fourfold, etc.

Q. How are blocks measured?

A. By the length of the shell. For example, a 10-inch block has a shell ten inches long.

Q. Between what sizes do blocks vary?

A. From 4 to 24 inches. *For types of blocks in common use, see Plate.*

Q. What is a TACKLE?

A. A combination of ropes and blocks for the purpose of increasing power. Tackles are used in hoisting heavy weights.

Q. What is the simplest form of tackle?

A. A single whip; a rope rove through a stationary block. This does not increase power, as the block does not move; it gives better lead.

Q. Which block of a tackle should be hooked to the weight to be moved?

A. If possible, the block containing the greatest number of parts of the rope, because each part of the rope will increase the power. If a tackle has a double block in one end and a single block in the other, the double block should always be at the weight, as it has 4 parts of the rope while the other has but three.

Q. What general method is followed in strapping a block?

A. A strap may be made either by splicing two ends of a rope together, or by working a grommet of the proper length. About once and a half around the block will allow an end for splicing. Pass strand or rope through eye of hook, then fit to block and splice, or work grommet. Put seizing on strap between thimble and block. Splice goes at breech of block. It is sometimes thought best to worm, parcel, and cover strap with leather before securing it in place.

Q. What is meant by the friction of a tackle?

A. The amount of power that is lost by the resistance due to the rope passing through the block.

Q. How many principal tackles are there in general use?

A. 1. A RUNNER.—A single movable block and fall, the fall has a thimble in the end for hooking a purchase.

2. THE GUNTACKLE PURCHASE.—Two single blocks. The standing part of the fall is made fast to the block that the hauling part leads from.

3. THE LUFF TACKLE.—Double and single block; the standing part of the fall is made fast to the single block.

4. TWOFOLD PURCHASE.—Two double blocks; the standing part is made fast to the block that the hauling part comes from.

5. TREBLE PURCHASE, OR THREEFOLD PURCHASE.—Two treble blocks.

Other tackles are modifications of these, and they take their names from the purposes for which used.

Q. What increase is caused by friction of the blocks?

A. Add about 10 per cent to weight to be lifted for every sheave the fall leads over; then divide by number of parts leading to the moving block.

Q. What advantage has a patent block?

A. The friction rollers make friction much less. Patent blocks should not be used in hoisting heavy weights because the rollers might be crushed.

Q. Which is less affected by friction, manila or hemp rope?

A. Manila. The stiffer the rope, the greater effect has friction.

Q. What is meant by the standing part, the hauling part, and the bight of a rope?

A. The standing part is the end made fast.

The hauling part is the end taken hold of to haul.

The bight is the middle, or the part between the standing and the hauling parts.

Q. How are HAWSERS stowed?

A. On reels; they should be kept out of the holds, if possible.

Q. What hawsers would you expect to find on a modern battleship?

A. Two 10-inch manila, length 120 fathoms.
One 9-inch manila, length 120 fathoms.
Two 8-inch manila, length 120 fathoms.
Two 5-inch manila, length 120 fathoms.
One 5-inch steel wire, length 100 fathoms.
One 4½-inch steel wire, length 100 fathoms.
One 4-inch steel wire, length 100 fathoms.
One 6-inch steel wire, length 150 fathoms.

The 6-inch steel wire rope is a towline. This list is merely typical. Find out the size, length, and material of the hawsers

of the ship on which you are serving; and the location of all the reels.

Q. What is the safe working load for a 6-inch manila hawser?

A. 10,200 pounds.

Q. For a 6-inch steel wire hawser?

A. 50,000 pounds.

Q. What hawsers does a battleship usually require in mooring to a dock?

A. 8, 9 and 10-inch manila.
4, 4½ and 5-inch wire.

Q. What is a HEAVING LINE?

A. It is a light line used for the purpose of getting a hawser ashore when mooring a ship to a dock, or passing a heavy line for any purpose whatever. One end of the heaving line is bent to the hawser, care being taken to see that the latter is clear for running. The rest of the heaving line is carefully coiled by a capable man, cast to the dock, where it is received by men previously detailed, who run away with the heaving line and haul the hawser ashore. Before a man can be relied on to make a good cast, he must have had a good deal of practice.

Q. What is a CAMEL?

A. It is a float provided to keep a vessel off, and so prevent injury to her side when mooring to a dock. The camels must be hauled into position by the shore gang at the points where they are seen to be needed.

Q. What precautions must be taken in regard to the use of fenders in handling a large ship around docks?

A. Fenders should be used of such length that, as the ship comes in on them, the pressure will be distributed over a large number of frames, and not confined to a single point.

Q. In mooring a ship to a dock, what is meant by a SPRING?

A. A line diagonal to the keel that exerts a force when power is applied to it in the direction of the keel, or at right angles to that direction.

Q. What is a BREAST?

A. A line at right angles to the keel, used in mooring to a dock.

Q. What is a MOORING STAPLE?

A. It is an iron staple secured in a ship's side to receive chains that may be used in securing a ship to a dock. Battleships usually have three mooring staples, or mooring irons, on each side.

Q. What are SPUR SHORES?

A. Long timbers used to breast a ship off a dock. Heel of

spur shore is lashed to ship's side; the other end of spur shore rests on dock.

Q. What is a BROW?

A. The gangway leading from ship to shore, when moored alongside a dock.

Q. What is a BOLLARD?

A. A vertical timber on the dock to which a ship's hawsers are secured.

Q. What is a DOLPHIN?

A. A spar fitted with a ring bolt through which a hawser can be rove.

Q. What is a STRAP?

A. A piece of rope, spliced to form a ring, used to sling heavy weights, or for the purpose of securing a tackle to any object.

Q. What is a JIGGER?

A. A light luff tackle used for miscellaneous deck work.

Q. HOW SHOULD A ROPE BE COILED DOWN?

A. Right handed rope from left to right, clockwise; left handed rope from right to left, except that hemp hawsers are always coiled from left to right—with the hand of a clock.

Q. WHAT SHOULD ALWAYS BE DONE WITH RUNNING RIGGING DURING WET WEATHER?

A. It should all be *slacked up,* because the rope shrinks when wet, and the rigging will get so taut that it will spring or carry something away.

Q. How is standing rigging protected against the weather?

A. If of hemp, it should be covered with a coating of black ing made of tar oil and coal tar. Wire rigging is galvanized, and it is also wormed, parcelled and served, then blackened from end to end as a protection against wear and tear. If it is ever used when not galvanized, it should be protected by a mixture of red lead and boiled linseed oil.

Q. Give material and size of boat falls?

A. 3½-inch manila.

Q. Of speed cone halliards.

A. 18-thread manila.

Q. Of signal halliards?

A. Italian hemp, 9-thread sennet.

Q. What is sennet?

A. Flat cordage, formed by plaiting rope yarns or thread together.

Q. What are YARDS?

A. They are spars suspended horizontally from a mast. They were formerly used for spreading sails, but now their principal

use is to ensure the proper display of signals. The ends of a yard are the yard-arms; the center of the yard is termed the slings; the parts between the yard-arms and the slings are termed the quarters.

Q. What is the TRUCK?

A. A small wooden cap at the summit of a flagstaff or masthead.

Q. What is a BOOM?

A. A long spar used, on sailing vessels, to extend the foot of a sail. On modern ships the swinging spars along the ship's side that are rigged out in port to afford a place for the ship's boats to secure. The boat booms aft are termed the quarter booms.

Q. What are GUYS?

A. Side supports for booms.

Q. What is a TOPPING-LIFT?

A. On modern battleships, a galvanized steel wire that supports the outer end of the swinging boom.

Q. What is a PENDANT?

A. A short length of galvanized wire rope secured to the swinging boom; one end of the pendant has an eye-splice so that boats may secure to it.

Q. What is a GUESS-WARP?

A. A line by which a boat secures to the swinging boom. It may be slacked off from deck.

Q. In coming to anchor, what should be done at the same instant of time that the anchor is let go?

A. Shift the colors from the gaff to the flagstaff. Rig out the booms. Lower the gangways.

Q. What precaution in shifting the colors?

A. Do not start the colors from the gaff until they have been hoisted at the flagstaff.

Q. What is the GAFF?

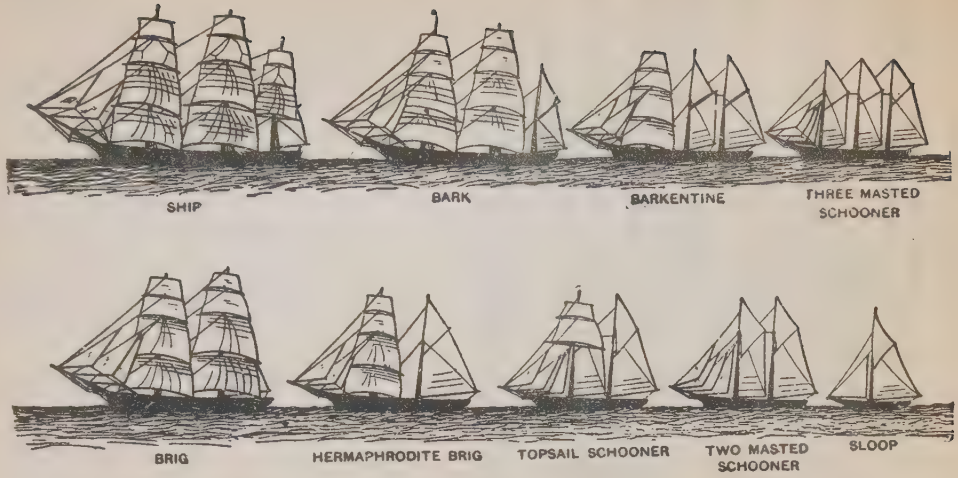
A. A small projecting spar abaft the mainmast. On sailing ships the gaff was used to spread a fore-and-aft sail.

Q. What are the different rigs of a sailing vessel?

A. Ship. Brig.
Bark. Brigantine.
Barkentine. Hermaphrodite brig.

One, two, three, four, five, six and seven-masted schooners.
Sloop.

See plate. The brigantine is not shown in the plate; it is the same as the brig, but without a square mainsail.



RIGS OF SAILING VESSELS.
From Luce's Seamanship, 1884.

Q. What is the difference between square and fore-and-aft rigs?

A. A vessel is square rigged on a certain mast when the sails on that mast are bent to yards; and fore-and-aft rigged when the sails are bent to gaffs.

Q. How are the masts named?

A. Beginning forward, they are named the foremast, the mainmast, and the mizzenmast. If there are only two masts, one is the fore, the other the main.

Q. What is the RIDGE-ROPE?

A. The rope to which the edges of an awning are hauled out.

Q. What are AWNINGS?

A. They are canvas coverings spread over the deck of a vessel to protect the crew from the weather. Awning stanchions secured outside the ship along the rail support the ridge-rope to which the awning is hauled out by the earings and the stops.

Q. What are Irish pennants?

A. Rope yarns, or loose ends, hanging about the rigging or deck. Their appearance is very unseamanlike.

Q. What precaution in securing the stops when spreading awnings?

A. Be careful to stow away the ends neatly so as to present a seamanlike appearance.

PART TWO

"S"

GROUND TACKLE

PART TWO.

"S."

GROUND TACKLE.

Q. What is meant by "GROUND TACKLE?"

A. It is a general term given to the gear used in anchoring and mooring ship.

Q. What are some of the various anchors in use?

A. Formerly the old-fashioned two-arm anchor with stock at right angles, known as the Navy type anchor, was used almost exclusively. Recently, however, this anchor has been almost entirely replaced by various forms of patent anchors, without stocks. Among these are the Baldt, Dunn, Admiral, and Federal. All these anchors have two flukes in the mud at once. They differ from one another principally in the way the shank is attached to the crown and the flukes.

Q. Name and describe the principal parts of an anchor?

A. *Shank.*—The long middle part of anchor between stock and crown.

RING (Shackle or Jewsharp).—The large shackle attached by a riveted pin to the upper end of the shank. The chain is shackled to the ring.

Arms.—The pieces extending from each side of the lower end of the shank. They form hooks which bury in the ground when the anchor is let go, and thus hold the ship stationary.

Palm or Fluke.—The broad piece shaped like a shield that is on each arm.

Blade.—The part of the arm at the back of the palm.

Bill.—The part of the arm beyond the palm. Extreme end of the arm.

Crown.—The lower end of the shank where the arms are welded on.

Throat.—The upper curved part of the arm where it joins the shank.

Stock.—The beam placed at right angles to the shank. It runs through a hole in the shank below the ring. Since it is at right angles to the arms, when the anchor is dropped it cants the anchor, causing the flukes to take in the mud.

Fig. 1
Old Fashioned
Anchor.

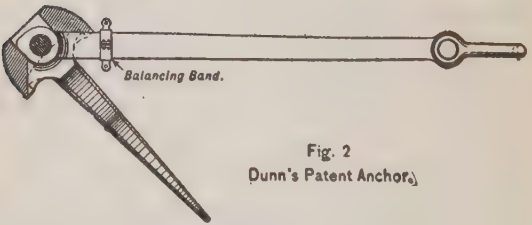
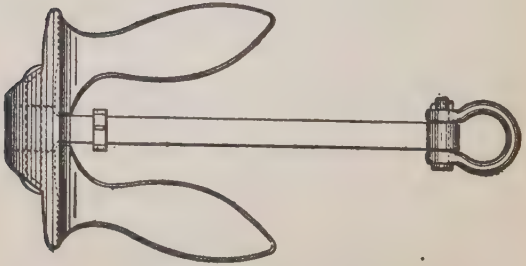


Fig. 2
Dunn's Patent Anchor.



Anchors, U. S. Navy.
Plate 1.

Anchors that have both flukes take in the mud at the same time rarely have stocks, as they do not need canting. Such an anchor lies on its side.

Q. Where are the anchors and chain cables used in the Navy made.

A. Anchors were formerly made at the Boston Navy Yard. Now they are all purchased from private firms according to specifications. Chain cables are all made at the Boston Navy Yard.

Q. Of what material are anchors made?

A. Usually of cast steel, except the stocks of Navy type anchors and the shanks of patent anchors for which forged steel is used.

Q. GIVE ADVANTAGES OF PATENT ANCHORS OVER THE OLD-FASHIONED?

A. 1. They are housed in the hawse pipes and held there by deck stoppers fitted with pelican hooks and turnbuckles. Consequently this dispenses with the operations of "catting" and "fishing" formerly required to secure an anchor on the bill-board.

2. If used as spare anchors, they will stow more easily on the deck, as they lie flat.

3. They lie flat, with no long stock projecting; consequently, there is no interference with gun fire, which is an important consideration on men-of-war.

4. There is less danger of fouling, due chiefly to the absence of a long stock.

Q. What is meant by a foul anchor?

A. When, in weighing anchor, the chain is found to be foul of the stock, shank, or other part of the anchor, instead of leading up from the ring, the anchor is reported to be "foul."

Q. Are old-fashioned, or Navy type, anchors still used?

A. They are still used on small vessels and on torpedo boats and destroyers as they are supposed to have superior holding power for the same weight. On destroyers they are used chiefly because it is difficult to arrange a hawse pipe in the narrow bows of these vessels suitable for housing any of the patent anchors. Kedge anchors on battleships are usually of the Navy type.

Q. What are HAWSE HOLES?

A. Holes in the bows of a ship for cables to pass through.

Q. What are HAWSE PIPES?

A. Steel pipes fitted in the hawse holes to take the chafe of the cables.

Q. What is the BILLBOARD?

A. A shelf, or ledge, on the ship's side to support the flukes of an anchor.

Q. What is the CAT-HEAD?

A. Older ships were fitted with a timber projecting over the bows to which the anchor was hoisted.

Q. What is the ring stopper; the shank painter?

A. Small chains secured on the forecastle of a ship. They hold the anchor on the billboard ready for letting go. The ring stopper passes out through ring and up to tumbler on deck. The shank painter goes out around the shank at throat of anchor and up to tumbler. By springing the trigger they are released at the same time, and both ends of the anchor go simultaneously.

Q. What is meant by "CATTING" an anchor?

A. To hoist it to cat-head and pass the ring stopper.

Q. What is meant by "FISHING" an anchor?

A. To hoist the fluke of the anchor up to the billboard.

Q. Where do you still find gear for handling the old-fashioned anchor?

A. On small vessels and torpedo boats and destroyers, where the old-fashioned anchor is used for reasons given heretofore.

Q. Is it necessary to "cat" and "fish" patent anchors?

A. No.

Q. How is a patent anchor let go?

A. The weight of the anchor is taken up by a pelican hook stopper. When the anchor is to be let go, pull the locking pin and knock off the link holding the pelican hook. This is much simpler than letting go the old-fashioned anchor.

Q. What is the balancing band and link?

A. It is a band fitted with a ring on each side of the shank of the anchor. It is placed at the balancing point of the anchor so that a tackle hooked in it will hoist the anchor level and land it on the billboard.

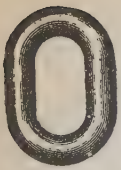
Q. Name and describe the various anchors used on board ship?

A. Bower anchors, sheet anchors, stream anchors, stern anchors and kedge anchors.

BOWERS.—The anchors carried on the bows. Two on each vessel.

SHEETS.—Spare anchors about the size of the bowers. Sometimes two are carried; usually only one. As a rule, they are carried on the bows on separate billboards, or in the hawse pipes.

STREAM ANCHORS.—About one-quarter the weight of the



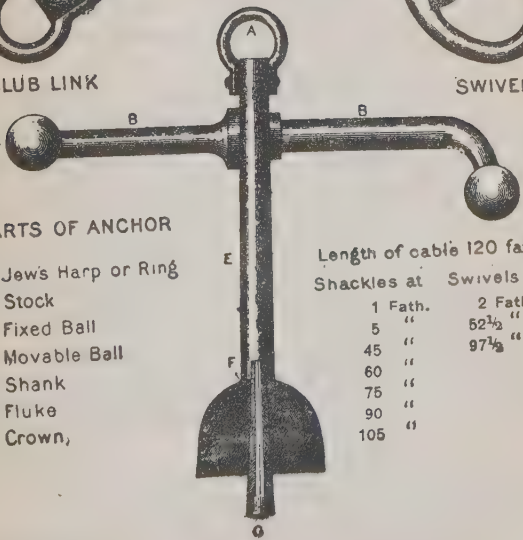
OPEN LINK

SHACKLE

STUD LINK

CLUB LINK

SWIVEL



PARTS OF ANCHOR

A Jew's Harp or Ring
B Stock
C Fixed Ball
D Movable Ball
E Shank
F Fluke
G Crown.

Length of cable 120 fath.

Shackles at	Swivels at
1 Fath.	2 Fath.
5 "	52½ "
45 "	97½ "
60 "	
75 "	
90 "	
105 "	

Plate a.

bower anchors. Used for work too heavy for a kedge and not heavy enough for a bower.

KEDGES.—Small anchors used for light work, such as warping or kedging. Two are supplied to each ship. They vary in weight from 100 to 900 pounds.

Q. What is meant by WARPING, and by KEDGING?

A. Warping is the name given to the act of hauling a ship around into a certain position by making the end of a line fast to an anchor, or to a secure hold ashore, and then moving the ship by hauling on this line. Kedging is a term applied to hauling the ship ahead by planting light anchors ahead in succession and hauling up to them. As soon as the ship reaches the first anchor, it is weighed and carried ahead; meanwhile the ship is hauled ahead on the second anchor.

Q. What is a MUSHROOM ANCHOR?

A. An anchor shaped like a mushroom, with a short shank coming up from the center. It has no stock. Such an anchor is used for permanent moorings for a buoy. Submarines use mushroom anchors.

Q. What is a SEA ANCHOR?

A. It is a contrivance of large surface, with bridles, shaped somewhat after the fashion of an ordinary kite. When a ship is drifting, the sea anchor is put overboard, with weight enough to immerse it and keep it upright. Since the sea anchor is below the surface of the water, it does not drift. As the ship drifts, the lines securing the ship to the anchor tauten, and the vessel is held head to the sea. The sea anchor has various forms. It may be made of spars lashed together and covered with canvas; by a frame like an umbrella; or even a triangular sail spread with a boom and having a chain around its lower edge. When the sea anchor is put over, the vessel should ride with a long scope of line.

Q. How can you tell the weight of an anchor?

A. The weight of every anchor is marked on the crown of the anchor. This weight includes the shackle and the stock.

Q. Give weights of bower and sheet anchors of your ship.

Q. What is a CAPSTAN?

A. It is a barrel-shaped apparatus used on board ship for moving heavy weights, such as anchors. It is also used for warping ship and heaving around on lines.

Q. What are the principal parts of the capstan?

A. Spindle, barrel, drumhead, pigeon holes, pawls, and pawl rim.

Q. What is the spindle?

A. The shaft on which the capstan revolves.

Q. What is the barrel?

A. The round, perpendicular part that forms the body. It has vertical ribs.

Q. What is the drumhead?

A. The circular part on top of the barrel.

Q. What are the pigeon holes?

A. The square holes in the drumhead to receive the bars.

Q. What are the pawls?

A. Short bars of iron working on short iron pins. Their purpose is to catch in the pawl rim and so prevent the capstan from turning backwards.

Q. What is the pawl rim?

A. A cast iron rim secured to the deck around the bottom of the capstan. The pawl rim is fitted with notches into which the lower ends of the pawls fall when the capstan is hove around.

Q. What are chain whelps?

A. Ridges of iron in the space at the bottom of the capstan. They prevent the chain from slipping when heaving in.

Q. What are capstan bars?

A. Large wooden bars shaped at one end to fit into the pigeon holes in the capstan. The other end has a slot to receive the swiftering line that goes around the ends of the bars to swifter them in when the capstan is to be operated by means of the bars. The bars, when shipped and swiftered, are used to turn the capstan when the anchor on small ships is hoisted by hand.

Q. How many capstans are there on vessels of the Navy?

A. Nearly every vessel is fitted with a power capstan. On battleships there is usually an electric capstan aft. Destroyers have a combined steam capstan and windlass forward. Colliers and other auxiliaries have a steam capstan aft. Battleships are also provided with from two to four electric winches that have horizontal shafts and gypsies. The capstans and gypsies are used for handling tow lines, for mooring, warping, handling boats, or coaling.

Q. What is a steam windlass?

A. It is a machine for weighing anchor by steam. Briefly, it consists of one, or more, wildcats. The wildcats take hold of the chain with whelps, and, as the windlass turns, the chain is hauled in. Each wildcat is usually arranged to turn freely on the spindle so that the anchor can be let go without removing the chain from the wildcat. A brake band on the wildcat controls the chain as it runs out; by means of a screw device called a compressor, the brake can be so tightened as to hold

the chain cable and anchor. On the older battleships the wildcats were located on a horizontal shaft; as many as four were sometimes on the same shaft. Later vessels have two or three vertical windlass shafts with the wildcats at the top revolving in a horizontal plane. On the very latest ships the wildcats are operated by electric motors instead of steam engines. Only the smallest sizes of windlasses, such, for example, as are installed on destroyers, have a capstan over the wildcat so that they can be operated by hand by means of the capstan bars. Small windlasses on tugs and barges are also operated by hand by means of pump brakes.

Q. What kind of CABLES are used in the Navy FOR ANCHORING?

A. Chain cables. They are 120 to 180 fathoms long. They are made of appropriate size chain for the size of the ship, and are composed of *shots* of 15 fathoms each, with the exception of the first shot which is 5 fathoms long, and the second which is 40 fathoms.

Q. How measure the size of chain cable?

A. The size of chain is designated by the *diameter* of the iron bar forming the link.

Q. How does this differ from the method of designating the size of rope?

A. The size of rope is designated by its *circumference* in inches.

Q. What is the size of a battleship's anchor chain?

A. Usually from 2¾ to 3 inches. The 3 fathom shots are, as a rule, ¼ of an inch larger than the rest of the chain.

Q. What kinds of chain are used for cables?

A. Two; stud link and short link cables. The latter has no studs; it is used for cables below ¾ of an inch, also on torpedo boats and destroyers.

Q. How are chain cables made?

A. Each link is made from a wrought iron bar which is heated, bent back upon itself though an angle of 180 degrees, reheated, and the ends tapered for welding, then threaded through the preceding link of the chain and welded by hand at the end of the link. The forged stud is then inserted. When the link cools, it binds the forged stud in place.

Q. What is the use of the stud in the chain?

A. It prevents kinks. It also adds to the life of a chain by preventing strains at the bands of links due to change of shape under heavy loads.

Q. How are the shots of chain connected together?

A. By means of SHACKLES. See Plate 2.

Q. Why is the round end of the shackle forward?

A. So the chain will run out easily when the anchor is let go; this arrangement also enables the wildcat to catch the shackle easily when heaving in.

Q. How is the shackle bolt held in place?

A. The shackle bolt is oval. It is held in place by a steel pin, called a forelock pin, driven into a hole through the end of bolt and shackle. This pin is held in place by a soft lead ring which is upest by a special tool into the groove around the end of the pin. In unshackling, this ring is sheared, the pin backed out, and then the bolt may be driven out.

Q. How is the large end of the shackle entered in the link of the chain?

A. The end link of every shot is left without a stud.

Q. How is the chain bent to the ring of the anchor?

A. Until recently by a short piece of chain consisting of a "clublink," "triplet" (3 common links), and two shackles which were left permanently secured to the anchor by means of the anchor shackle. The present standard arrangement is to shackle the chain direct to the anchor ring (shackle or jews-harp).

Q. What is a SWIVEL?

A. A contrivance placed in the chain to prevent turns in the cable as the ship swings to anchor. (See Plate 2). Swivels are large and give trouble in passing over the wildcat, so it is now customary to use only one swivel, and that is placed at the inboard end of the outboard (5 fathom) shot. Consequently, the swivel never somes to the wildcat.

Q. Where are cables stowed on board ship?

A. In "chain lockers" which are in the forward part of the vessel, a little abaft the windlass. The chain comes in over the wildcat, passes down vertically through the chain pipes into the chain locker.

Q. How is chain stowed in the lockers?

A. "Chain Tierers," men specially detailed from the various divisions, stow the chain in tires, fore and aft.

Q. How is the end of the chain secured in the locker?

A. It is rove through a ring bolt in the bottom of the chain locker, and then secured in a pelican-hook on the upper side of the locker. The extreme end of the cable is called the *bitter end*.

Q. Give an example of how the chain of a battleship is marked?

A. The following is an example of the method of marking chain so as to tell the length of cable out:

At 15 fathoms; 3 links painted red.

At 30 fathoms; 3 links painted white.

At 45 fathoms; the third link on either side of the shackle is painted white, and 3 turns of wire are put on the stud of the painted link.

At 60 fathoms; the fourth link on either side of shackle is painted white, and 4 turns of wire are put on the stud of the painted link.

At 75 fathoms, 90 fathoms, 105 fathoms and 120 fathoms, the fifth, sixth, seventh, and eighth links respectively are treated in the same manner as the 4th link at 60 fathoms, the number of turns of wire are 5, 6, 7 and 8, respectively.

White paint is used in marking so that the links may be easily seen at night.

Q. What is the object of having the second shot 40 instead of the usual 15 fathoms?

A. So that there will be no posibility that a shackle will be on the wildcat when breaking ground.

Q. Why is this objectionable?

A. Because the shackle may spring in passing over the wildcat, thus parting the cable.

Q. What is meant by MOORING?

A. A ship is moored when she has two anchors down at considerable distance apart, with such a scope of chain on each that she is held with her bow practically in one place between the anchors, regardless of tide. When a ship is moored, she will swing practically about her own bow as a pivot; the extent of her swinging will depend on the tautness with which she is moored. Mooring is resorted to when there is a limited amount of room for a ship to swing.

Q. What is an ANCHOR BUOY?

A. It is customary to secure a buoy to the anchor before letting it go, in order to mark its location, and also to afford assistance in recovering it in case the cable should part. The buoy is secured to the anchor by a buoy rope.

Q. What is meant by "streaming the buoy?"

A. Letting it fall from the forecastle, or the chains, into the water, just before the anchor is let go.

Q. What is meant by a buoy "watching?"

A. When it floats on the surface of the water. When the buoy does not "watch," either the buoy rope is too short, or the buoy leaks.

Q. What is meant by the expression "How does the chain tend?"

A. "In what direction, relative to the ship, does the chain

lead after leaving the hawse pipe?" For example, "The chain tends broad on the starboard bow."

Q. What is meant by VEERING?

A. Allowing the chain to pay out, in order to give the vessel more cable on her anchor; that is, a greater *scope* of chain.

Q. What are CHAIN STOPPERS?

A. Heavy stoppers consisting of a shackle, several links, a turnbuckle, and a releasing hook. They are shackled to heavy pad eyes on the deck, usually two for each chain cable, one located near the hawse pipe and one further aft, called respectively, the housing chain stopper and the riding chain stopper.

Q. What is a CONTROLLER?

A. It is an apparatus that catches each horizontal link of the chain as it is hove in. In case the cable slips off the windlass, or anything else goes wrong, the controller will hold it from surging or running out. In mooring ship, the controller and the stoppers hold the chain while the mooring swivel is being put on. Controllers have been omitted from recent Naval vessels because they cause considerable wear on the chains.

Q. What is a COMPRESSOR?

A. A curved bar of iron which sweeps across the mouth of the chain pipe below deck, choking the chain in against the lower edge of the pipe. It is pivoted on one end, and has an eye in the other to which a tackle may be hooked. It is used to check the chain after letting go the anchor, also to check the chain in veering, and to hold the ship until stoppers are passed.

Q. What are BITTS?

A. Heavy cylindrical castings firmly secured to the deck. It was the custom to take the chain around the bitts, either one or two turns, for riding or for letting go. Bitts are not used on the late ships as the spare, or sheet, cable with which they were intended to be used is now usually let go from the nearest wildcat. When both bower anchors are in use, one of the bower chains is thrown off and replaced by the sheet chain. In the latest ships a third wildcat is provided for the sheet chain.

Q. What are dummy wildcats?

A. Wildcats fitted with whelps, brake band, and compressor in the usual manner, but without any driving gear. They have but recently come into use. They are fitted to the spare chain, and are used for letting go, veering chain, and riding by. These dummy wildcats and the chain stoppers replace the riding bitts that were formerly installed.

PART TWO

"T"

THE COMPASS, LOG AND LEAD

PART TWO.

"T."

THE COMPASS, LOG AND LEAD.

Q. What is a COMPASS?

A. The instrument by which ship is steered on a given course. Briefly, it is a magnetic needle, so fitted as to turn easily on a pivot; it therefore assumes a position pointing to magnetic North. The needle is attached to a compass card, which is graduated to enable the steersman to steer any given course. Instead of a single magnetic needle, there are four bunches of needles, contained in small cylinders attached to the compass card.

Q. Does the North point of the compass always point due North?

A. No; the influence of the iron in the ship causes "deviation," but this is nearly all compensated by the correctors which are carefully placed, and should never be moved exc pt by the officer who has charge of the compasses.

Q. What often affects the compass, in addition to the iron of the ship?

A. Sometimes a man at the wheel has a knife in his pocket, or a steel grommet in his cap. This is very dangerous as it sometimes throws the compass out a point or more; as it is not constant or noticeable, it cannot be discovered. Of course the effect would be that when the ship was heading say North-east by compass, she might really be heading North due to this unknown error, and consequently standing right on to a reef or a shoal. Any small piece of iron around the compass, especially when movable, is therefore to be carefully avoided.

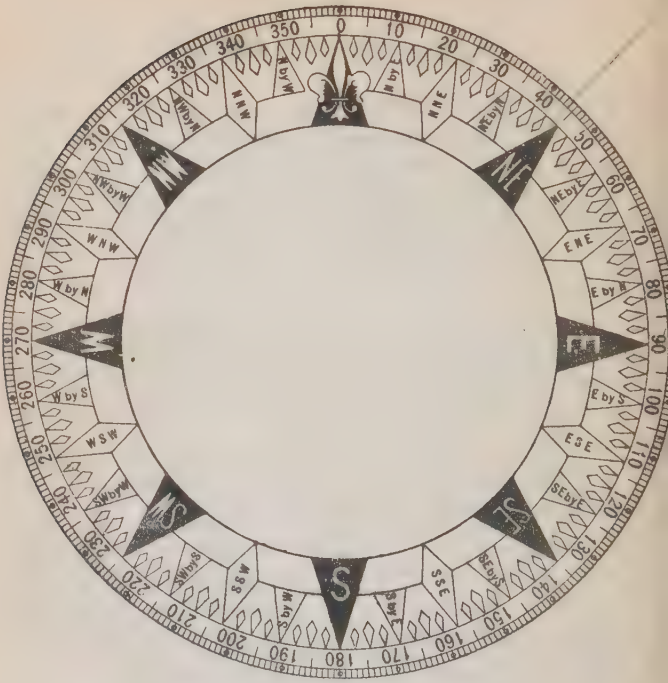
NEVER HAVE A KNIFE OR ANY OTHER PIECE OF METAL IN YOUR POCKET WHEN YOU ARE NEAR THE COMPASS.

Q. How is the compass card graduated?

A. The compass has 8 points in each quarter, equal to 90 degrees, making in the whole, 32 points, equal to 360 degrees of the horizon.

Q. How mounted?

A. The compass card is mounted on a pivot in a bowl; and the bowl is filled with alcohol. This keeps the card from wabbling or moving too quickly. Alcohol is used because it will not freeze.



COMPASS.

Plate I.

Q. How are the points of the compass named?

A. The principal, or cardinal points, are North, South, East and West. Half-way between these are the semi-cardinal points; Northeast, Southeast, Northwest, and Southwest. These eight are called the eight principal points. The point half-way between the cardinal and the semi-cardinal points combines their names, for example, the point half-way between North and Northeast is North-Northeast; West-Southwest is half-way between West and Southwest, and so on. Points on each side of a *principal* point begin with the name of that point; insert the word "by" and end with the name of the next cardinal point in the given direction, for example, North by East, Northeast by North, West by South, Northwest by West. Thus the names of the points in a quadrant (one-quarter of the circle) are as follows:

North.
North by East.
North-Northeast.
Northeast by North.
Northeast.
Northeast by East.
East-Northeast.
East by North.
East.

Q. How are quarter-points named?

A. Except adjacent to the principal points, always toward East or West. Adjacent to the principal points they are reckoned toward the nearest cardinal point. For example, you would say Northwest ¼ North, or West ½ North, but as soon as you get one point away from a principal point each fractional point must be reckoned toward East or West, for example, you would say WNW. ½ W. Therefore, the points and quarter-points of a quadrant are as follows:

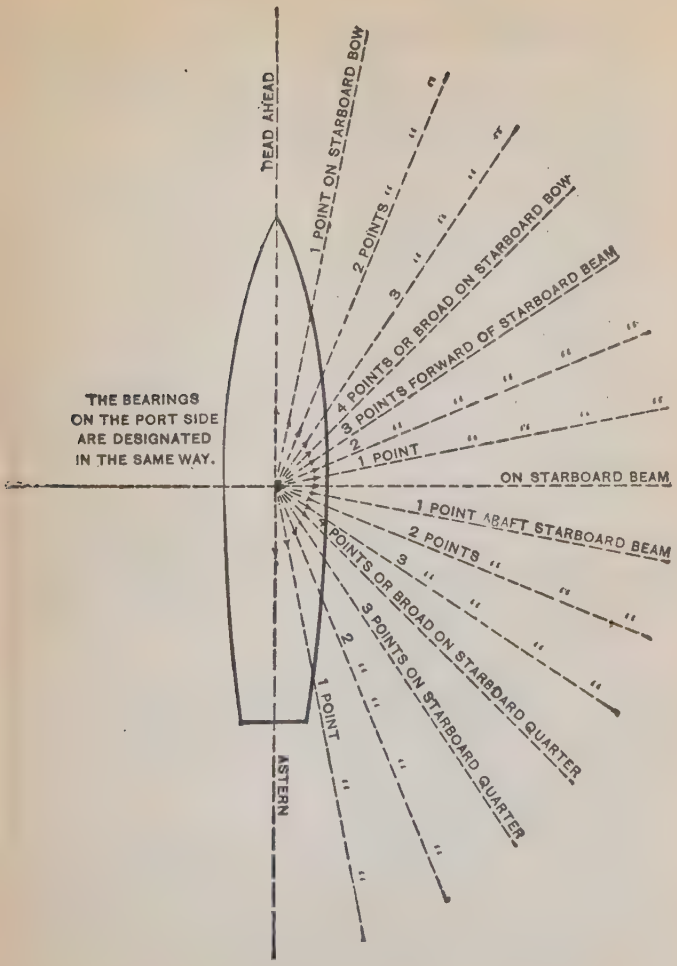
NORTH.	NORTHEAST.
N. ¼ E.	NE. ¼ E.
N. ½ E.	NE. ½ E.
N. ¾ E.	NE. ¾ E.
N. by E.	NE. by E.
N. by E. ¼ E.	NE. by E. ¼ E.
N. by E. ½ E.	NE. by E. ½ E.
N. by E. ¾ E.	NE. by E. ¾ E.
NORTH NORTHEAST.	EAST NORTHEAST.
NNE. ¼ E.	ENE. ¼ E.
NNE. ½ E.	ENE. ½ E.
NNE. ¾ E.	ENE. ¾ E.
NE. by N.	East by North.
NE. ¾ N.	East ¾ N.
NE. ½ N.	East ½ N.
NE. ¼ N.	East ¼ N.

Q. What is meant by BOXING THE COMPASS?
A. Calling off the points of a compass in order.
Q. How many points are there in a quadrant?
A. Eight.
Q. How many in a half-quadrant?
A. Four.
Q. How many points is it from Northeast to North by East?
A. Three.
Q. How many from East-Northeast to East-Southeast?
A. Four.
Q. How many from Northeast by East to Southeast by South?
A. Eight.
Q. How many from Northwest by North to South by West?
A. Twelve. (It is 12 points from South to Northwest, and as the points given are each one point to the right of these points, they are 12 points apart.)

NOTE.—Questions like this should be continued until perfect familiarity is attained; there is no better method.

Q. What is meant by the BEARING of anything?
A. It is its direction from the ship. These are two kinds, the "compass bearing," which is the direction by compass, and the "relative bearing," which is the bearing referred to the ship; for example, if the ship was heading North, a light bearing Northeast would be "broad on the starboard bow," and this latter is called its *relative bearing;* in the example given, the *compass bearing* would be Northeast.
Q. How are RELATIVE BEARINGS named?
A. Beginning ahead, the relative bearings are named as follows:

Dead Ahead.
One point on starboard (or port) bow.
Two points on starboard (or port) bow.
Three points on starboard (or port) bow.
Broad on starboard (or port) bow.
Three points forward of the starboard (or port) beam.
Two points forward of the starboard (or port) beam.
One point forward of the starboard (or port) beam.
Abeam.
One point abaft the starboard (or port) beam.
Two points abaft the starboard (or port) beam.
Three points abaft the starboard (or port) beam.
Broad on the starboard (or port) quarter.
Three points on the starboard (or port) quarter.


DEAD AHEAD
1 POINT ON STARBOARD BOW
2 POINTS " "
3 " " "
4 POINTS OR BROAD ON STARBOARD BOW
3 POINTS FORWARD OF STARBOARD BEAM
2 " " " "
1 POINT " " " "
ON STARBOARD BEAM
1 POINT ABAFT STARBOARD BEAM
2 POINTS " " "
3 " " " "
4 POINTS OR BROAD ON STARBOARD QUARTER
3 POINTS ON STARBOARD QUARTER
2 " " "
1 POINT " "
ASTERN
THE BEARINGS ON THE PORT SIDE ARE DESIGNATED IN THE SAME WAY.

Two points on the starboard (or port) quarter.
One point on the starboard (or port) quarter.
Astern.

In reporting vessels, lights, or anything else of interest, a lookout always gives the relative bearing of the object from the ship in the terms of the above table.

Q. How many points from ahead to abeam?
A. Eight.
Q. From ahead to the bow?
A. Four.
Q. From bow to quarter?
A. Eight.
Q. From ahead to the quarter?
A. Twelve.
Q. From dead ahead to astern?
A. Sixteen.
Q. What is a BINNACLE?
A. It is the composition case that holds the compass and correctors.
Q. How would boats steer at sea when out of sight of land?
A. All boats at sea are supplied with small portable boat compasses.
Q. How does a compass act?
A. since it is pivoted on a fine point, the motion of the ship when she swings does not affect it, but it continues always to point to the North, while the ship, and hence the binnacle and lubber's point, all swing around it and make it appear as if it were moving. Thus as long as it points to the North, the ship's head can, by the graduated card, be placed at any desired angle from North, or on any desired course.
Q. What is the LUBBER'S POINT of a compass?
A. On the inside rim of the chamber enclosing the card is a vertical line which shows the fore-and-aft line of the ship. This line is called the "lubber's point," and, in steering, this line is made to coincide as nearly as possible with the given course.
Q. What is the GYRO COMPASS?
A. The master gyroscopic compass is installed in the central station and thus protected from gun fire. The compass depends for its accuracy on a spinning gyroscope similar in principle to a gyroscopic top; it is operated and kept spinning by an electric motor. Due to the action of gyroscope, this compass, when properly adjusted, points always to the true North. At various parts of the ship, repeating compasses, electrically controlled, record the reading of the master compass. The gyro compass,

insomuch as it has eliminated the compass error, is of inestimable value; but the magnetic compass will always be carried to furnish a check on the gyro compass.

Q. What is the RUDDER?

A. It is a long peculiarly-shaped device, built of steel, which is attached or swung to the rudder post by means of pintles (or bolts) on the forward side of the rudder; the pintles ship in gudgeons (braces with an eye in them) secured to the after side of the rudder post. The projection on the upper and forward part of the rudder enters the ship through a stuffing box, and this prolongation is called the rudder head. To this head the tiller, or yoke, it attached. The entire weight of the rudder is carried on a floating ring on the top face of the rudder support.

Q. What is meant by steering a vessel?

A. It is the guiding of a vessel on any particular course.

Q. In steering, how is the rudder moved?

A. The steering is accomplished by means of a STEERING ENGINE generally located in a compartment adjoining the main-engine room. The steering engine is connected to the STEERING GEAR in the extreme after-end of the ship by means of a *shaft and pinion.*

The *pinion* meshes into a large drive gear attached to a *shaft* on which have been cut *double right and left hand screws,* one on either end of the shaft.

These *right and left hand screws* on the shaft operate *nuts* which are fitted to *guide rods* and connected to the *rudder cross-head.*

The *rudder cross-head* is securely attached to the rudder and operates it.

Q. How is the steering engine operated?

A. The valve gear of the steering engine is fitted with a travelling nut which operates a *differential valve;* by this means the engine is driven in the direction required. The travelling nut is limited in movement by two stops. These stops are adjusted so as to allow the engine to travel only so many revolutions in one direction as may be necessary to move the rudder about 35 degrees on either side of the midship line. The operation of the steering engine is controlled—

1. By *wire rope rove on drums.* The forward drum is attached by bevel gears and shafting to the *steering standards* on the steering platform, in the conning tower, and in the central station. The *after drum* is attached to the screw which operates the *travelling nut,* and, in turn, the travelling nut moves the *differential valve,* admitting steam to the engine.

2. By *telemotor*. This accomplishes the movement of the differential valve by the use of *two pairs of cylinders*. Each pair is connected by pistons and rods; and the two pairs of cylinders are connected by *pipes*. The whole system is filled with a liquid consisting of a mixture of *glycerine and water*. The steering standards on the steering platform, in the conning tower, and in the central station are connected to the forward pair of cylinders by means of a *pinion* which meshes into a *rack on the piston rod* between the two cylinders. The movement of the piston rod, and, consequently, of the pistons of the forward pair of cylinders causes the fluid to act on the pistons of the after pair of cylinders, and these pistons are connected to the differential valve by means of bell cranks.

Q. What provision is made for hand steering?

A. It is arranged for by means of a pinion on a shaft operated by hand steering wheel in the steering gear room. This pinion also meshes with the large drive gear on the double screw shaft. This pinion may be engaged by means of a clutch, also by handwheel geared to the drum operating relieving tackles connected to the side rods after the latter have been disconnected from transversing nuts.

Q. Is there more than one place from which the ship can be steered?

A. Yes. Ships can usually be steered from four or five places. so if one is shot away, there are other wheels available. In action the ability of the ship to steer is of prime importance. Warships are usually capable of being steered by steam from the conning platform, the conning tower, central station, steering engine room and steering gear room; by hand (without the use of the steering engine) from the steering gear room.

Q. How do you move the wheel in steering?

A. In all our men-of-war the head of the ship goes with the wheel.

Q. What is meant by CONNING a ship?

A. The act of giving orders to the steersman to enable him to keep on the desired course.

Q. What is meant by the ship's COURSE when it is given to the man at the wheel?

A. It is the point, or the degree, of the compass at which the ship's head is to be kept for a certain period.

Q. Who usually conns the ship coming into port?

A. The chief quartermaster who gets his orders from the captain, the pilot, the navigator, or other officer well acquainted with the waters.

Q. Who conns at sea?

A. At sea the steering is usually done on a course, and the actual conning is done by the quartermaster of the watch, under the supervision of the officer of the deck.

Q. In steering a vessel, what part of the vessel is first to move when the course is suddenly changed?

A. The stern. When the rudder is put over, the water acts on its surface, pushing the stern around. This is most important to remember when trying to get away from, or to come alongside a dock.

Q. What is a TRICK AT THE WHEEL?

A. It is the regular turn of a steersman at the wheel; his watch at wheel.

Q. What is the meaning of the following COMMANDS OR DIRECTIONS CONNECTED WITH THE OPERATION OF THE RUDDER?

1. "Right." A. When the wheel and the rudder are to be moved to the right to turn the ship's head to the right (with headway on.)

2. "Left." A. When the wheel and the rudder are to be moved to the left to turn the ship's head to the left (with headway on).

3. "Right—full rudder." A. By "full rudder" is meant the hard over rudder angle of the ship. In this case the rudder is moved as far to the right as possible.

4. "Right—standard rudder." A. The wheel and the rudder must be moved as far to the right as the standard rudder angle which is prescribed for each ship.

5. "Right—half rudder." A. The wheel and the rudder must be moved as far to the right as standard half rudder angle which is prescribed for each ship.

In addition to these orders, the orders "Right (or Left)—ten degrees rudder (or five, fifteen, twenty, or the required number of degrees rudder)" may be given.

Q. What is meant by "STEADY?"

A. The ship's head is pointing in the right direction. Keep it so.

Q. What is meant by "MEET HER?"

A. When a ship's head is approaching the proper course and is swinging, the rudder is put gradually over the other way to "meet," or check her, so she will not swing beyond the desired course.

Q. In changing course, how is the steersman informed of the new course?

A. After the order in regard to the rudder has been properly carried out, the steersman should be informed of the new

course by such terms as "Course..135 degrees," or whatever the course may be.

Q. What is meant by STEERAGEWAY?

A. The slowest speed at which a ship will steer.

Q. When in formation, how much rudder is to be used in making changes of direction of more than twenty degrees?

A. Standard rudder (or standard half, if prescribed). The rudder shall be put over in as near six seconds as practicable. When the ship is 20 degrees from the new course, the rudder shall be put amidships, and the ship met so as to prevent swinging past the new course.

Q. How do you know when the rudder is amidships?

A. Ships have rudder indicators which show the position of the rudder at all times. To put the rudder amidships, move the wheel until the rudder indicator read zero degrees. The rudder is then amidships; that is, it is in a fore-and-aft line with the ship's keel.

Q. WHAT IS A LEAD LINE?

A. A line with a leaden weight attached, used to find the depth of water.

Q. What is finding the depth of water called?

A. Sounding.

Q. How are soundings obtained on board men-of-war?

A. By using the hand lead, the deep-sea (pronounced "dipsey") lead, or by the use of the sounding machine.

Q. How is the head lead marked and fitted?

A. The lead varies in weight from 7 to 14 pounds. It is secured to the line by a piece of strong leather. Before marking, the line is well soaked. It is then carefully measured and marked as follows:

At	2	fathoms	from	the	lead,	with 2 strips of leather.
"	3	"	"	"	"	3 strips of leather.
"	5	"	"	"	"	a white rag.
"	7	"	"	"	"	a red rag.
"	10	"	"	"	"	leather having a hole in it.
"	13	"	"	"		as at 3.
"	15	"	"	"		as at 5.
"	17	"	"	"		as at 7.
"	20	"	"	"	with	two knots.
"	25	"	"	"	"	one knot.
"	30	"	"	"	"	three knots.
"	35	"	"	"	"	one knot.
"	40	"	"	"	"	four knots.

These are known as the "marks." The numbers omitted, as 1, 4, 6, 8, etc., are called the "deeps," and they are spoken

of together as the MARKS AND DEEPS OF THE LEAD LINE. On the hand lead, there are 9 "marks," and 11 "deeps."

Q. When and how are soundings taken?

A. Soundings, to ascertain the depth of the water on entering or leaving a port, or in any case where there is supposed to be less than 20 fathoms of water, are taken by the hand lead. A quartermaster, a seaman, or an ordinary seaman is stationed in the chains for the purpose. Soundings are taken while the vessel has headway on; the leadsman throws the lead forward, and gets the depth as the vessel passes, when the line is nearly perpendicular.

The leadsman gives the lead a swing in order to throw it ahead so that the lead will be on the bottom by the time the line gets up and down. Of course the deeper the water, or the faster the ship is going, the farther it will be necessary to heave the lead. After the line is heaved out ahead, it must be rapidly hauled in, so that it will not be hanging in a bight when the leadsman gets over the lead. It is most important that the line be taut at that time insomuch as it is then that the depth is read off. When the lead is on the bottom, and the line is up and down, the leadsman looks at the mark nearest the surface of the water, AND CALLS OUT IN A VOICE LOUD ENOUGH TO REACH THE BRIDGE, the sounding obtained.

Q. HOW ARE SOUNDINGS REPORTED?

A. If the depth obtained corresponds with any of the MARKS, the leadsman sings out "BY THE MARK 5," "BY THE MARK 13," or whatever mark registers the depth of the water. If the depth is greater than any of the marks, but not one-half greater, he sings out "AND A QUARTER 5," "AND A QUARTER 13," or whatever the registered depth may be. If the depth is one-half more than any of the marks, he sings out "AND A HALF 5," or "AND A HALF 13," or whatever the depth may be. If the depth is a quarter of a fathom less than any mark, he sings out "QUARTER LESS 5," or "QUARTER LESS 13," or whatever the depth may be. If the leadsman judges, by the distance between any two of the marks, that the depth of the water is 4, 6, 8, 9, 11, 12, 14, 16, 18, 19, or 21 fathoms, he says "BY THE DEEP 4," or "BY THE DEEP 6," or whatever the sounding may be. The reports should be made in a sharp, clear voice; the drawl is no longer allowed.

IF NO BOTTOM IS OBTAINED, THAT REPORT IS JUST AS IMPORTANT AS THE OTHERS. Report "No Bottom at ...," whatever the number of fathoms may be.

Q. What is the DEEP-SEA LEAD?

A. It is a lead from 30 to 100 pounds in weight, with a line correspondingly heavy. It is marked at every 5 fathoms. At

20 fathoms there are 2 knots; at 25 fathoms one knot; at 30 fathoms there are 3 knots, etc.

Q. Why is a lead "armed," and how is it done?

A. There is a hollow in the lower end of every lead which, before use, is filled level full with tallow. When the lead sinks, the tallow first strikes the bottom, particles of which adhere to the arming; consequently, when the lead is hauled up, it brings an actual sample of the bottom.

Q. How is a lead line read at night?

A. The leadsman reads the mark in his hand, then subtracts from this reading the distance from his hand to the water.

Q. What is the object in whirling the lead over the head before taking a sounding?

A. In order to heave the lead far enough to obtain a sounding in deep water, or at a fast speed. The only way to become expert at this swing is by constant practice. The following rule is observed by the best leadsmen: Always keep the arm straight from the shoulder, in line with the lead. In other words, it is not necessary or desirable to bend the elbow in making the cast.

Q. How is sounding done under service conditions at present?

A. Ordinarily by the hand lead when in shallow water. When coasting, or in deep water, the SIR WILLIAM THOMPSON SOUNDING MACHINE is used.

Q. Why is this better than the deep-sea lead?

A. It can be used without stopping, or slowing the ship, and it is more convenient.

Q. Give a brief description of this sounding machine?

A. It consists of a wooden frame bolted to the deck; the frame carries a drum upon which are wound several hundred fathoms of galvanized piano wire. The drum is controlled by a brake. To the end of the wire is attached a metal cylinder. Beyond the cylinder and connected to it by a short length of plaited rope is a heavy sinker. The metal cylinder carries a slender tube of glass, closed at one end and coated on the inside with a chemical substance which changes color upon actual contact with sea water. The tube is placed in the cylinder with its open end down. As it sinks, the water rises in the tube, and the air originally contained in the tube is compressed with a force which depends upon the "head" of water acting upon it. As this "head" depends upon the depth, it follows that the compression of the air, and hence the height to which the water rises in the tube, becomes a measure of the depth. With properly coated tubes, carefully used, the limit of dis-

coloration is marked by a sharply defined line, and the depth corresponding to this line is read off by means of a scale marked in fathoms. In place of the chemically coated tube, a tube made of ground glass may be used. Ground glass, when wet, shows clear. Consequently, a tube of this kind, if perfectly dry in the beginning, should give a clear record of the height to which the water has risen in it. Advantage of the ground glass tube; it can be used an indefinite number of times, if thoroughly dried after each cast. Disadvantage of the ground glass tube; the height to which the water has risen is not so clearly defined as it is in the chemically coated tube, consequently the latter is easier to read, and therefore more adaptable for night work.

The action of the brake which controls the drum of the machine is, briefly, as follows: The reel is controlled by a brake; it is worked by a crank-handle. When this handle is turned in one direction, the brake is released and the reel unwinds, allowing the sinker and tube at the end of the wire to descend to the bottom. When the crank is turned in the opposite direction, the brake is put on, and the reel stopped from unwinding. After a hinged clamp that holds the frame of the reel has been cast off, the continued turning of the crank will turn frame and reel, and thus wind in the wire.

Q. What is a DRIFT LEAD?

A. It is a lead which is used when a ship is at anchor, and there is any danger of dragging; for example, when there is a fresh breeze or a strong current.

Q. How it is used?

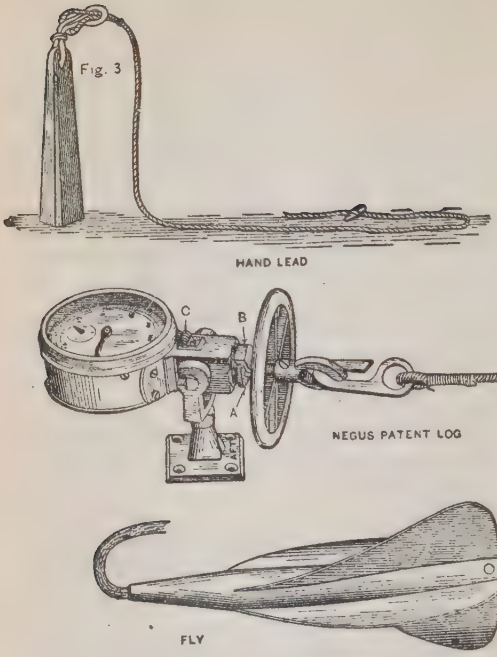
A. It is a heavy lead from 25 to 50 pounds in weight. It is placed on the bottom with considerable slack line. A man is detailed to watch the line. If the ship drags, the lead will remain fast on the bottom and consequently cause the line to tauten.

Q. What is the breastband?

A. It is the band, sometimes in the form of an apron, against which the leadsman in the chains leans when taking a sounding.

Q. How would a good leadsman heave a hand lead?

A. After swinging it over his head to get good speed, he would let go of the toggle with a jerk, just as the lead comes forward of his feet before it rises. It would be hove so that the lead as it shoots forward would not rise above the leadsman's body. The line should be paid out to it in its flight as the strain comes on it, and the whole coil should not necessarily be let go. An accurate sounding can never be obtained if the coil of line is let go, as it cannot be hauled in in time.



LOGS AND LEAD.
Plate 3.

Q. When are leadsmen sent in the chains?

A. When approaching land or shoals.

Q. How is the speed of the ship through the water measured?

A. By means of mechanical LOGS of different makes; the "chip log," formerly used in sailing ships and occasionally in slow steamers, is rarely used in the Navy.

Q. What is the principle of the PATENT LOG?

A. It consists, usually, of a rotator which resembles the propeller of a ship. This rotator is towed astern and thus made to rotate with a velocity varying with the speed. The towing line is twisted by the rotator, and transmits its motion to a series of gears and dials which have hands like those of a clock to register the distance run in an interval of time. The log is usually fastened to the taffrail, or to a spar rigged out from the side of the ship to carry it clear of the current made by the propellers.

Q. What are some of the troubles of the patent log?

A. Most patent logs have a certain error, but after this is once determined, the patent log should give no more trouble, provided it is kept well oiled. The rotator is often fouled by a piece of seaweed or other drifting substance. It is frequently carried away by sudden backing; consequently, when there is any probability of stopping the engines, the patent log should be hauled in.

Q. What is the Nicholson Log?

A. The logs described above record distance, but not speed. The Nicholson log gives both the distance run and the actual speed at any instant.

NOTE.—See Part IV, page 766, for complete description.

PART TWO

"U"

ELECTRICITY

PART TWO.

"U."

ELECTRICITY.

By Lieutenant (Junior Grade) E. J. Foy, U. S. Navy.

Q. What is electricity?

A. Electricity is an invisible agent, which manifests itself in various ways. The precise nature of electricity is not known, but the effects produced by it, the methods of controlling it and the laws governing its action are becoming well known.

Q. In what way is electricity usually conducted from one place to another?

A. The usual method of conducting electricity is by wiring, and the electricity should be thought of as an invisible current flowing along the wire and always, in the case of direct current, in the same direction.

Q. In what way does the flowing of this current differ from the flowing of water?

A. It differs in that in order to flow at all, provision must be made for the electric current to return to its original source. This is what is meant by saying that the electric circuit must be complete.

There is another way in which this current differs from one of water. In a current of water, there is an actual transfer of substance from one point to another. When an electric current is flowing, however, there is no actual transfer of substance. To all appearances, a wire having a current flowing in it is the same as one which has not.

Q. Why are electric wires of different sizes?

A. A wire of large cross section offers less resistance to the flow of a current of electricity than does one of small cross section. Hence for electric appliances that require a large amount of current the conductors must be of increased size.

Q. Of what substances are electric wires made and why?

A. Electric wires, known as *conductors,* are made of substances which readily allow electricity to pass from one portion of them to another. Silver is the best conductor, but copper, on account of being an excellent conductor and comparatively

cheap, is used almost entirely for conducting electricity from one point to another.

The other metals are also god conductors, ranking in that respect, however, after copper. Salt water and the body are fairly good conductors.

Q. What are INSULATORS, and where are they used?

A. Insulators are those substances which do not allow a free passage of electricity, but which offer a considerable *resistance* to its passage. Insulators are used to surround conductors, as the rubber or tape placed around electric wires. They are also used to restrict the electric current to the conductor. Air is a good insulator.

Q. What is a SAFETY FUSE?

A. When an electric current is passed through a circuit that offers a resistance to this passage of current, heat is developed in the circuit. Circuits are designed to carry a certain amount of current. In the circuits are placed appliances known as *safety fuses,* which are designed to carry the ordinary amount of current, but to melt and break the circuit if the current becomes great enough to heat any part of it to a dangerous degree. These are generally made of lead or of an alloy of lead and tin, known as "half-and-half" solder.

Q. What precautions should be taken in putting in a fuse?

A. Care should be taken to put in a fuse of the proper size and material. Ordinarily an electrician should be called, for the reason that if a fuse of the wrong rating or one made of improper kind of metal is put in, serious damage to the circuit may result. To replace a large fuse, the switch controlling the circuit that the fuse protects should be opened. Stand on some insulating material and be careful not to touch the metal to which the circuit is connected. If it is necessary to use a tool, such as a screwdriver, an insulated one should be selected or if no insulated tool is to be had, tape should be used to wrap all but the tip of the blade.

Set up on one end of the fuse lightly, keeping the other end pointed away from the well clear of its contact. Then move the free end into place and set up firmly on both screws. When this is done, close the switch.

If the fuse is a small branch fuse, it can be replaced without opening the switch on the circuit. Hold the glass in which the fuse is enclosed firmly in the middle and press it squarely into the contact clips.

Q. What is a magnet?

A. A magnet is a substance which has the power of attracting iron. A commonly known magnet is an oxide of iron known

as the *loadstone*. This is found in nature. The "horseshoe" magnet is probably the most familiar type.

Q. What is an ELECTRO-MAGNET?

A. If an insulated wire carrying an electric current is wrapped around a piece of soft iron, the iron becomes a magnet and has the same properties as the loadstone.

Q. Explain what is meant by "MAGNETIC FIELD"?

A. The space immediately surrounding a magnet is called the *field* and is subject to the influence of the magnet. The presence of this magnetic field may be shown by bringing a small piece of iron or steel gradually closer to the magnet. When it reaches the field, the influence of the magnet is exerted upon it and it is attracted. All of this space, in which the attracting force of the magnet is felt, is called the magnetic field.

Q. What has the magnetic field to do with the electric current?

A. In the definition of an electro-magnet it was explained that by passing a current of electricity through an insulated wire wrapped around a piece of iron, a magnet is produced. Reverse effects are produced when a closed loop of wire is moved across a magnetic field, namely, the motion of the wire across the field induces or causes a current to flow in the wire. This current lasts only so long as the wire is in motion.

Q. Where is the electricity that is used on board ship generated?

A. It is generated by the dynamos (or generators) in the dynamo rooms, and also by batteries.

Q. Explain briefly the method of generating electricity by the dynamos?

A. In the dynamo rooms are two or more electric machines, the number and size depending upon the type of vessel. These machines are known as generating sets and are composed essentially of a dynamo and a prime mover, which may be a reciprocating engine, a turbine, or as it is in some of the later ships, an oil or gas engine. The engine shaft is directly connected to the shaft of the dynamo, upon which is a core of cylindrical shape and upon this, lengthwise, are wound a number of wires. The core is of magnetic material and the wires are good conductors of electricity. This core is called the *armature*. Arranged around this armature and close to its are a number of *field poles*. These are cores of iron and are electro-magnets. When the engine is started, it turns the armature in the magnetic field, and this movement of the conductors in the field sets up an electric current in the conductors.

The current is then taken by way of a commutator, brushes and wires to the switchboard in the distribution room, where it is distributed to the various parts of the ship.

Q. What are ELECTRIC MOTORS, and how are they used?

A. An electric motor is a machine consisting of an armature mounted upon a shaft, and one or more pair of field magnets; the arrangement is essentially the same as that described for the dynamo. An electric current is passed through the wire wound upon the armature and the field magnets. This produces a magnetic attraction between the armature and field magnets and causes the armature to revolve.

The shaft of the motor is connected either directly or by gearing to the apparatus it is intended to run.

The speed of the motor is varied by an apparatus known as a controller.

Q. State some of the uses to which electricity is put on board ship.

A. Electricity is used for lighting, signaling and for interior communication and furnishes the power for the following, on the latest ships:

Air compressors.
Ammunition hoists.
Boat cranes.
Bake ovens.
Capstans.
Deck winches.
Dish washers.
Dough mixers.
Drain pumps.
Electric heaters.
Egg beaters.
Engine turning motors.
Fire room blowers.
Flushing pumps.
Forge blowers.
Fresh water pumps.
Ice cream freezers.
Laundry washers and ironers.
Magazine cooling machines.
Meat choppers.
Potato peelers.
Radio telegraphy.
Ranges, galley.
Searchlights.
Steering motors.
Turret training, gun. elevating, loading and firing.
Ventilation blowers.
Water heaters.
Windlass motors.
Workshop tools.

Q. What care should be taken in the ordinary handling of electric appliances on board ship?

A. All electric appliances should be kept clean. Do not allow a film of dust or dirt to collect.

Particular care should be exercised not to allow water or moisture to remain on wiring appliances. Whenever any moisture appears it should be wiped off at once. Moisture breaks down the insulation.

In handling salt water hose around deck receptacles, care must be exercised in seeing that screw caps are screwed on solidly. Salt water moisture should be even more carefully wiped off than fresh.

When using portable lights always be careful not to break the flexible wire, and to replace caps on receptacles. When portables get out of order they should be repaired at once.

Special care should be exercised to see that incandescent lamps are not removed from lighting fixtures and that reflector and shade holders are screwed up tight.

Do not leave telephone boxes open or allow fire control telephones to hang out in places where they are liable to get wet. In stowing fire control telephones in boxes, place the telephone in the box and coil the wire down in as large a coil as possible on top of the telephone. Then see that the lid of the box is properly secured.

Do not tamper with the lights in electric instruments.

In starting a motor by the use of a controller always be careful to move the controller handle slowly to the "on" position, touching each succeeding contact. This throws out the resistance slowly and allows the motor to speed up gradually. Care should be taken to see that the starting lever is never left between contacts. When through using a motor and the lever has been moved to the "off" position, the current should be turned off by opening the circuit breaker which is located either on or near the controller. Should the circuit breaker open automatically while the motor is running, the controller lever should immediately be put in the "off" position.

Q. What is a CIRCUIT BREAKER?

A. A circuit breaker is a device installed in electric circuits and is designed to open automatically and break the circuit when an excessive current passes through it. In this respect it works similarly to a safety fuse.

Q. HOW IS A SEARCHLIGHT OPERATED?

A. To operate a searchlight, the cover is first removed and the clamps loosened to see if the light will train and elevate easily. Then the projector doors are opened. By turning the crank handle wrench supplied for the purpose, move the carbons until they are about one-eighth of an inch apart. Then turn on the current by closing the supply switch. After the light is burning the carbons are fed together automatically. To focus the lamp, insert the crank handle lever into the focusing screw, and by turning the lever move the lamp toward or away from the mirror until the proper beam is shown. The proper beam is one that is either straight or

slightly converging. Moving the lamp toward the mirror causes the beam to diverge and moving it away from the mirror causes it to converge.

Always close the projector doors before turning off the main switch.

All men in the deck force should be able to operate a searchlight as one is often needed in an emergency. This is particularly applicable to quartermasters, signalmen and messengers, and these men should get the electrician in charge of the lights to explain the operation to them.

PART TWO

"V"

INFANTRY.

PART TWO.

"V."

INFANTRY.

I. INSTRUCTION WITHOUT ARMS.

Q. What is meant by a RANK?

A. A line of men placed side by side.

Q. What is meant by a FILE?

A. Two men, the front-rank man and the corresponding man of the rear rank. The front-rank man is the *file leader*. A file which has no rear-rank man is a *blank file*. The term FILE applies also to a single man in a single-rank formation.

Q. What is done at the command FALL IN?

A. Men assemble rapidly and take their assigned places in ranks, *at attention*.

NOTE.—The position of ATTENTION is explained in PART ONE; everyone on board ship should know the position of attention.

Q. What is the meaning of the command REST?

A. Each man keeps one foot in place, but is not required to preserve silence or immobility.

Q. What is done at the command AT EASE?

A. Each man keeps one foot in place and preserves silence, but not immobility.

NOTE.—It often happens that men fail to realize the difference between these two commands. Always remember that there is *no talking permitted at the command* AT EASE.

Q. What is done at the command,

1. *Parade.* 2. REST?

A: Carry the right foot six inches straight to the rear, left knee slightly bent; clasp the hands, without constraint, in front of the center of the body, fingers joined, left hand uppermost, left thumb clasped by thumb and forefinger of right hand; preserve silence and steadiness of position.

Q. How is "Attention" resumed?

A. By command,

1. *Squad.* 2. ATTENTION.

The men take the position and fix their attention.

Q. What is done at the command,

1. *Eyes.* 2. RIGHT (LEFT). 3. FRONT?

A. 1. At the command *right*, turn the head to the right so as to bring the left eye in a line about two inches to the right of of the center of the body, eyes fixed on the line of eyes of the men in, or supposed to be in, the same rank.

2. In executing the marching salute, officers and men will distinctly turn the head and eyes, glancing directly toward the person or colors saluted; and in passing they will continue to turn the face as long as practicable.

3. At the command *front*, turn the head and eyes to the front.

Q. What is done at the command,

1. *Right* (*Left*). FACE?

A. 1. Raise the right heel and left toe and face to the right, turning on the left heel, at the same time place the right foot by the side of the left.

2. The facings to the left are also executed upon the left heel.

3. 1. *Right* (*Left*) *half.* 2. FACE. Similarly executed, facing 45 degrees.

TO FACE IN MARCHING.—To face in marching and advance, turn on the ball of either foot and step off with the other foot in the new line of direction; to face in marching without gaining ground in the new direction, turn on the ball of either foot and mark time.

Q. What is done at the command,

1. *About.* 2. FACE?

A. At the first command, carry the toe of the right foot about 8 inches to the rear, and 3 inches to the left of the left heel, without changing the position of the left foot. At the second command, turn upon the left heel and right toe, face to the rear, and replace the right heel by the side of the left.

Q. What is the length of the full step in quick time?

A. Thirty inches measured from heel to heel.

Q. What is the cadence?

A. One hundred and twenty steps per minute.

Q. What is done at the command,

1. *Forward.* 2. MARCH?

A. 1. At the command *forward*, throw the weight of the body upon the right leg, left knee straight.

2. At the command *march,* move the left foot smartly, but without jerk, straight forward 30 inches from the right, measuring from heel to heel, sole near the ground; straighten and turn the knee slightly out; at the same time throw the weight of the body forward and plant the foot without shock, weight of body resting upon it; next, in like manner, advance the right foot and plant it as above; continue the march.

Q. What is the length of the full step in double time?

A. Thirty-six inches.

Q. What is the cadence in double time?

A. One hundred and eighty steps per minute.

Q. What is done at the command,

1. *Double time.* 2. MARCH?

A. If at a halt, at the first command shift the weight of the body to the right leg. At the command *march,* raise the forearms, fingers closed, to a horizontal position along the waist line; take up an easy run with the step and cadence of double time, allowing a natural swinging motion to the arms.

If marching in quick time, at the command *march,* given as either foot strikes the ground, take one step in quick time, and then step off in double time.

Q. How resume quick time from the double?

A. The command is,

1. *Quick time.* 2. MARCH.

At the command *march,* given as either foot strikes the ground, advance and plant the other foot in double time, resume the quick time, dropping the hands by the sides.

Q. How arrest the march in quick or double time?

A. The command is,

1. *Squad (section, company, etc.).* 2. HALT.

At the command *halt,* given as either foot strikes the ground, advance and plant the other foot; place the foot in rear by the side of the other. If in double time, drop the hands by the sides.

The halt, while *marking time,* and marching at the *half-step, side step,* and *back step,* is executed by the same commands.

Q. What is done at the command,

1. *Mark time.* 2. MARCH?

A. At the command *march,* given the instant either foot is coming to the ground, mark the cadence without gaining ground, by alternately advancing each foot about half its length, and bringing it back on a line with the other.

Q. What is done at the command,

1. *Half step.* 2. MARCH?

A. Take steps of 15 inches in quick time, and 18 inches in double time.

FORWARD, HALF STEP, HALT, and MARK TIME may be executed one from the other in quick or double time.

Q. What order is given in order to resume the full step from half step, or mark time?

A. 1. *Forward.* 2. MARCH.

Q. What is done at the command,

1. *Right (Left) step.* 2. MARCH?

A. Carry and plant the right foot 10 inches to the right; bring the left foot beside it and continue the movement in the cadence of quick time. The side step is used for small intervals only, and is not executed in double time.

Q. What is done at the command,

1. *Backward.* 2. MARCH?

A. 1. At the command *march,* step back with the left foot 15 inches straight to the rear, then with the right, and so on, the feet alternating.

2. At the command *halt* bring back the foot in front to the side of the one in the rear.

3. The back step is used for short distances only, and is not executed in double time.

Q. What is done at the command,

1. *By the right (left) flank.* 2. MARCH?

A. Being in march or *marking time,* at the command *march,* given as the right foot strikes the ground, advance and plant the left foot; then face to the right in marching and step off in the new direction and immediately with the right foot.

Q. What is done at the command,

1. *To the rear.* 2. MARCH?

A. At the command *march,* given as the right foot strikes the ground, advance and plant the left foot; then, turning on the balls of both feet, face to the *right about* and immediately step off with the left foot.

Q. What is done at the command,

1. *Change step.* 2. MARCH?

A. At the command *march,* given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. The change on the right foot is similarly executed,

the command *march* being given as the left foot strikes the ground.

Q. What is the DISTANCE BETWEEN RANKS in line and in column?

A. THIRTY-SIX inches. The tendency on board ship is for the rear rank to close to less than this distance. *Remember to keep the full distance of 36 inches between ranks* unless your division officer instructs you to the contrary, due to lack of space under certain special conditions.

II. INSTRUCTION WITH ARMS.

The Manual of Arms can be mastered only by means of constant and earnest practice. Sufficient opportunity for such practice is afforded by the infantry drills at the training stations and on board ship. It is considered that illustrations of the various positions of the Manual will be of assistance; therefore, the following plates are inserted. *The recruit should study these pictures with care and practice the positions frequently* in order that he may learn them quickly. He must remember that the instructor works very hard to teach all these movements in the short time allowed for the work, and it is the duty of the recruit—and others—*to assist the instructor as much as possible* by studying these positions and by paying strict attention at drill.

In this chapter the details of the school of the squad, school of the company and school of the battalion are not given. This omission is not due to the fact that the ordinary seaman is not supposed to know the details of infantry drill, but because it is assumed that he will master these details better at actual drill than he will by reading about them, *after he has mastered the details of the school of the recruit.*

Plate 1.
Order Arms.

Plate 2.
Present Arms.

Plate 3.
Coming to the order.

Plate 4.
Port Arms.

Plate 5.
Open and close Chamber.

Plate 6.
Shoulder Arms.

Plate 7.
Slope Arms.

Plate 8.
Parade rest.

Note in plates, lanyard is no longer a part of the uniform

Plate 9.
Trail Arms.

Plate 10.
Charge bayonet.

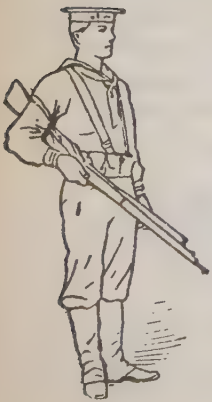


Plate 11.
Secure Arms.

Plate 12.
Rifle salute, at shoulder.

Plate 13.
Rifle salute.

Plate 14.
Order kneeling.

Plate 15.
Lying down.

III. THE LANDING FORCE.

Q. What, in general, are the duties of the landing force?

A. Each ship and squadron shall have a permanently organized landing force, composed of infantry and artillery. The service required of the landing force may vary from police duty in a country where a state of anarchy or revolution exists, to the hardest kind of offensive operations against an enemy on shore.

Q. What is meant by a SECTION OF INFANTRY?

A. A unit consisting of one officer, three petty officers, and twenty-four men.

Q. How many sections form a COMPANY?

A. Two.

Q. How many companies form a BATTALION?

A. Two or more companies, not exceeding six.

Q. How many battalions form a REGIMENT?

A. Two, or more.

Q. How many regiments form a BRIGADE?

A. Two, or more.

Q. HOW DO YOU FIND OUT WHAT COMPANY OF THE LANDING FORCE YOU ARE ASSIGNED TO?

A. Look up your station as given in the landing force bill posted on the crew's bulletin board. If you do not understand the bill, ask your division officer.

Q. When should you find out to what company you are assigned—that is, should you look it up as soon as you come on board ship or wait until the landing force is called away?

A. Look up your station and find out all about your duties as soon as you report on board.

Q. What boats are used for the transportation of the infantry of the landing force?

A. Cutters and large whaleboats, one section complete in each boat, the men being seated by squads from the bow to the stern, ready to deploy the instant the boats strike the beach.

Q. How do you know what boat your company embarks in?

A. This information is also posted on the bulletin board in the landing force bill.

Q. What is meant by the SPECIAL DETAILS accompanying the landing force?

A. The special details are:

1. Pioneers.
2. Signalmen.
3. Messmen.
4. Ammunition and ordnance party.
5. Gun-cotton party.
6. Ambulance party.

Q. How do you know whether you are assigned to one of these special details?

A. If this information is not given on the landing force bill, your division officer will notify you if you are assigned to a special detail.

Q. What are the duties of the PIONEERS?

A. They may precede the main body of the landing force in order to clear away obstructions and entanglements and repair bridges and roads. In camp they must assist in digging sinks, constructing defenses and entanglements, and making gun-emplacements.

Q. How many pioneers are detailed ordinarily for the landing force?

A. One man *for each section* landed.

Q. What are the duties of the SIGNALMEN?

A. In addition to the duty of making necessary signals, these men should be employed as special scouts; they should collect information, carry dispatches, and take charge of telegraph lines.

Q. How many signalmen are detailed ordinarily for the landing force?

A. One *for each company* landed.

Q. What are the duties of the MESSMEN?

A. One messman will be detailed as cook *for each section* landed, and he will take charge of and be responsible for the mess outfit of his section.

Q. What are the duties of the AMMUNITION-PARTY?

A. Each party will carry, in special haversacks, an ample supply of spare-parts for small arms and field pieces, and the necessary tools for the repair of ordnance material; also haversacks to distribute ammunition to the firing line.

Q. How many are ordinarily detailed for the ammunition-party?

A. One man *for each section* landed.

Q. What are the duties of the GUN-COTTON PARTY?

A. A gun-cotton party may be organized, supplied with gun-cotton and all the means for blowing up bridges, buildings and fortifications, or for destroying guns and planting mines. The gun-cotton party varies greatly in size according to the nature of the service.

Q. How many are ordinarily detailed for the AMBULANCE-PARTY?

A. One stretcherman *for each section.*

Q. In regard to the landing force, what is meant by the term LIGHTLY EQUIPPED?

A. When lightly equipped, men will carry filled canteens and cartridge-belt and will wear leggings. The haversack may be prescribed if circumstances require it.

Q. What is meant by FULLY EQUIPPED?

A. When fully equipped, each man will carry:

1. Haversack (packed).
2. Pack in pack carrier.
3. Cartridge belt.
4. Canteen cover.
5. Canteen (filled).
6. Cup.
7. First-aid pouch.
8. Bayonet scabbard.
9. Poncho.
10. Blanket.

Leggings will be worn.

NOTE.—Any of these articles, when not required by the special nature of service, may be omitted by direction of the commander-in-chief, or senior officer present.

Q. What extra equipment is carried by pioneers, and others when specially ordered?

A. Pick-mattock; pick-mattock carrier; hand-ax; hand-ax carrier; shovel; shovel carrier.

Q. What does the HAVERSACK contain?

A. 1. Meat can.
2. Knife.
3. Fork.
4. Spoon.
5. Bacon can.
6. Condiment can.

7. Towel.
8. Socks.
9. Tobacco.
10. Toilet articles.
11. Black and white thread and needles.

Q. What toilet articles are carried?
A. Comb; soap; tooth brush; tooth powder.
Q. What rations are carried?
A. 1. Four cartons of hard bread (20 ounces).
2. Two pounds of bacon.
3. Coffee, 4 ounces; sugar, 8 ounces; 3 days' rations of salt.

Q. What clothes are carried in the PACK?
A. 1. One suit of blue or white.
2. One suit of underclothes.
3. One white hat and one watch cap.
4. One pair of shoes.

ASSEMBLING THE EQUIPMENT.

Q. How is the pack carrier assembled to the haversack?
A. Spread the haversack on the ground, inner side down, outer flap to the front. Place the buttonholed edge of the pack carrier on the buttonholed edge of the haversack, lettered side of the carrier up, buttonholes of the carrier resting on the corresponding ones of the haversack. Lace the carrier to the haversack by passing the ends of the coupling strap through the corresponding buttonholes of the carrier and haversack nearest the center of the carrier, passing the ends up through the next buttonholes and continuing to the right and left, to the sides, until they are linked together. (Pl. 9.)

Q. How assemble the cartridge belt to the haversack?
A. With the pack carrier and haversack assembled, spread on the ground, inner side down, belt adjusted to man. Place the cartridge belt, pockets down, tops to the front, along the junction of the haversack and carrier. Insert the end hook of rear belt suspender in the center eyelet of the adjusting strap, the end of the hook outside of the belt. Insert end hooks of front belt suspenders in the eyelets between the second and third pockets from the male and female fasteners. (Pls. 10 and 16.)

Q. How assemble the canteen cover to the cartridge belt?
A. Disengage the canteen and cup from the cover, the cover being flexible and easier to attach. Attach the canteen cover to the belt under the rear pocket of the right pocket section of the belt by inserting one hook of the double hook attachment

in the eyelet from the inside of the belt. Pinch the base of the pocket, bringing eyelets close together; then insert the other hook in the same manner. Insert the canteen in the cup (assembled), place them in the cover, and secure the flaps. (Pls 10 and 14.)

Q. How assemble the first-aid pouch to the cartridge belt?

A. Attach the pouch under the second pocket of the right pocket section of the belt in the same manner as the canteen cover. Place the first-aid packet in the pouch and secure the cover. (Pls. 1 and 16.)

Q. How assemble the full equipment, with rations?

A. Place the assembled equipment on the ground, suspender side of haversack down, pockets of cartridge belt up, haversack spread out, inner flap and pack carrier extended their full length to the rear. (Pls. 11 and 13.)

An emergency ration for two days' service may be issued to each man and carried in the haversack, consisting of four cartons of hard bread (20 ounces) in the center of the haversack body, the lower ones on a line of attachment of the inside flap. Lay the remaining ones at the head, the bacon can and the condiment can at the head of the bread, bacon can at the bottom, containing 2 pounds, condiment can on top (coffee, 4 ounces; sugar, 8 ounces; three days' rations of salt in the cover).

The socks and toilet articles (Pl. 15) are rolled, towel on the outside, into a neat roll of the same approximate dimensions as a carton of bread, and are placed in front of the cans, at the head of the haversack.

The inner flap of the haversack is folded over these articles, the end of the flap being turned in so that the flap tends to hold the towel and rations firmly. The sides of the haversack are folded over the sides of the rows; the upper binding straps are passed through the loops on the outside of the inside flap, each strap through the loop opposite the point of its attachment to the haversack body, and fastened to the tongueless bar buckles on the opposite side. The straps are then pulled tight to make the fastening secure. The outer flap is folded over and fastened by means of the lower haversack binding strap and the tongueless bar buckle on the inside of the outer flap. The strap is pulled tight, drawing the outer flap singly over the filled haversack. (Pl. 12.)

Q. How assemble the clothing in the blanket without the poncho?

A. Lay the blanket out its full length, folding it back on its length so that its ends will meet at the center. The length is

approximately 158 inches, the width 59 inches. When the blanket is folded, its length is 79 inches, or half the total length. The blanket weighs 3 pounds. The left-hand part of the blanket forms a place for the clothing; the right-hand forms the lock. On the left-hand part of the blanket, about 1 foot from the edge, lay a blue, or a white, jumper and a pair of blue, or white, trousers, folded separately, single fold, placed side by side, forming the first layer of clothes. (Pl. 18.) On top of the first layer of clothes, place one undershirt and one pair of drawers, similarly folded, to form the second layer (extra suit of underclothes may be folded, if necessary). Place a white hat and a watch cap as most convenient, forming the outer layer. (Pl. 19.) In the place towards the edge of the blanket, near the body, place a pair of shoes, soles upward, and toes at the center, heels outward. Now fold the lower, or right-hand, part of the blanket over the equipment, locking the clothing. (Pl. 20.) Take the further edge of the blanket, away from the body, and fold it so that the edge will be in a line with the shoes. This forms the second fold and affords a means for rolling. Grasp the blanket and shoes firmly and roll tightly and compactly. This will form a pack approximately 8 inches in diameter and 29 inches in length.

Q. How assemble the clothing in the blanket with poncho or shelter half?

A. Spread the poncho on the ground and fold once on its length (Pl. 22), with the slit and flap at the top and center, the flap laid back. Take the edge of the poncho and fold it again (Pl. 23), forming an approximate square to receive the blanket pack, which is laid in the center of the poncho (Pl. 24), and fold the edges of the poncho snugly over the blanket pack, and, beginning on the side that bears the shoes, roll tightly and compactly. This also forms the pack, but it is advisable to carry the poncho in the upper carrier binding strap (Pl. 4) in case of a sudden change in weather, thus making it unnecessary to disturb the pack when removing poncho. The shelter half of the tent may be used in the same manner as the poncho in assembling the pack. It may be used to protect the equipment if the poncho is carried in the upper carrier binding strap.

Q. How assemble the pack?

A. Place the pack in the pack carrier and grasp the lower suspension at the base of the pack carrier, one in each hand; place the right knee against the bottom of the roll; pull the carrier down and force the pack up close against the bottom of the packed haversack; without removing the knee, pass the lower carrier binding strap over the pack and secure it by

means of the opposite buckle; in a similar manner secure the bottom haversack binding strap and then the upper carrier binding strap. Engage the snap hook on the pack suspenders in the lower suspension rings. (Pl. 13.) The equipment is now assembled and packed ready to be further adjusted to the man.

Q. How remove the pack without removing the equipment from the body?

A. Unsnap the pack suspender from the suspension rings and snap them to the eyelets on top of the belt and in rear of the rear pockets of the right and left pocket sections. Support the bottom of the pack with the left hand and with the right hand grasp the coupling strap at its middle and withdraw first one end, then the other; press down gently on the pack with both hands and remove it. Adjust the pack suspenders to suit. (Pl. 5.)

Q. How assemble the haversack with ration, without the pack?

A. With the pack carrier detached from the haversack, place the rest of the equipment on the ground as heretofore described; place the four cartons of hard bread, the bacon can, the condiment can, and the towel containing the toilet and other articles in one row in the middle of the haversack body horizontally, the toilet articles on top, the bacon can on the bottom, the row extending from top to bottom of the haversack. Fold the inside flap up and over; pass the three haversack binding straps through the loops on the inside flap and secure by means of the tongueless bar buckles on the opposite side of the haversack. Pass the lower haversack binding strap through the small horizontal buttonhole at the center, between the four sections of four perpendicular buttonholes; fold the outer flap of the haversack over the whole and secure by means of the tongueless bar buckle on its under side and the lower haversack binding strap. Pass the haversack suspension rings, which are secured to the outside of the inside flap, through the contiguous buttonholes in the lower edge of the haversack, and engage the snap hooks on the ends of the pack suspenders to the suspension rings as above mentioned. (Pl. 14.)

Q. How assemble the bayonet scabbard to the haversack?

A. Disengage the bayonet from the scabbard, and attach the scabbard by passing its lower end through the loop provided on the left side of the haversack body, then engage the double hook attachment in the eyelets on the outer flap on the haversack, inserting the hooks from the inside. Place the bayonet in the scabbard, eye to the front, edge of blade to the rear. (Pls. 13 and 14.)

Q. How assemble the shovel carrier to the haversack?

A. Fold the outer flap of the haversack over so that the meat-can pouch is uppermost and engage the double hook attachment in the eyelets in the intrenching tool attachment, inserting the hooks from the under side. Place the intrenching tool in the carrier and secure it by its binding strap. Place the meat can in the meat-can pouch. (Pls. 1 and 16.)

Q. How assemble the pick-mattock carrier to the cartridge belt?

A. Disengage the pick-mattock and handle from the carrier. Attach the pick-mattock carrier to the belt under the rear pocket of the left section of the belt by inserting one hook of the double-hook attachment in the eyelet from the inside of the belt; pinch the base of the pocket, bringing the eyelets close together, then insert the hook in the same manner. With lower part of the carrier body released by its strap insert the point of the pick-mattock into the top handle loop which forms a pocket for the point, and secure the blade by folding the lower body over, and fasten in position by a strap which passes through a loop to the body through a tongueless bar buckle sewed to the other end of the strap. Insert the pick-mattock handle through the top handle loop by the double hook, and the lower handle loop by the front of the body.

Q. How assemble the ax-carrier to the cartridge belt?

A. Disengage the ax from the ax-carrier. Assemble the ax-carrier under the second pocket of the left pocket section of the belt in the same manner as the pick-mattock carrier.

Q. What are the SANITARY REGULATIONS for members of the landing force, or other parties on shore?

A. On board ship, sanitary regulations can be effectively enforced, but on shore, under changed conditions, the maintenance of the highest efficiency of the command is dependent upon the co-operation of every man in the command. Everyone must obey the following regulations:

1. Take advantage of every opportunity to engage in athletic sports. In the tropics, engage in athletic sports in moderation. Swimming is a healthful tropical exercise.

2. Take proper care of the feet. Wear the prescribed shoe, and no other type. Before a march, the feet should be well greased with tallow, or neat's-foot oil, or the inside of the stockings should be covered with a stiff lather of common yellow soap well rubbed in. Within two hours after reaching camp, the feet should be wiped off with a wet cloth and clean stockings put on.

3. Breathe through the nose. Mouth-breathing induces sore throat, diseases of the nose and ears and causes thirst.

4. Brush the teeth night and morning.

5. The proper chewing of food is more important than the kind of food chewed. Thorough chewing makes food nourishing, prevents hunger, and diminishes thirst.

6. Where common drinking cups are not disinfected, lip-drinking, which consists in putting both lips, horse-fashion, into the fluid to be drunk, should be practiced.

7. The habit of abstaining from drinking water on the march is an excellent one; it can be readily acquired. Thirst sensations lie in the back of the throat; they may be relieved by carrying any small object—for example, a pebble—in the mouth.

8. *Boiled* water may be drunk at the start, and near the end of the march.

9. Carry *filled* canteen.

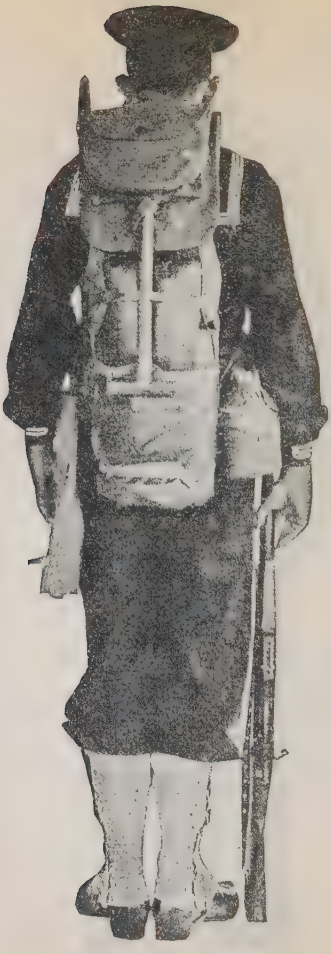
10. A daily bath and rub-down is desirable. The hair should be cut close, and the head washed daily.

11. Observe all the prescribed sanitary regulations in regard to the following sources of danger:

(a) Mosquitoes.
(b) Flies.
(c) Dust.
(d) Water.
(e) Food.
(f) Drinking-cups.
(g) Climate.

As a number of these details vary in different localities instructions will be issued by the medical officers to cover every particular landing party. *See that you obey these instructions to the letter;* upon such obedience depends your own good health and that of your comrades, and, possibly the success of the expedition on which you are engaged.

FULLY EQUIPPED.
(Front.)



FULLY EQUIPPED.
(Rear.)

FULLY EQUIPPED
(Without intrenching tools.)

PLATE 4.

FULLY EQUIPPED.
(Poncho carried in carrier binding strap.)

PARTIALLY EQUIPPED.
(Pack discarded.)

PLATE 6

PONCHO OVER EQUIPMENT.

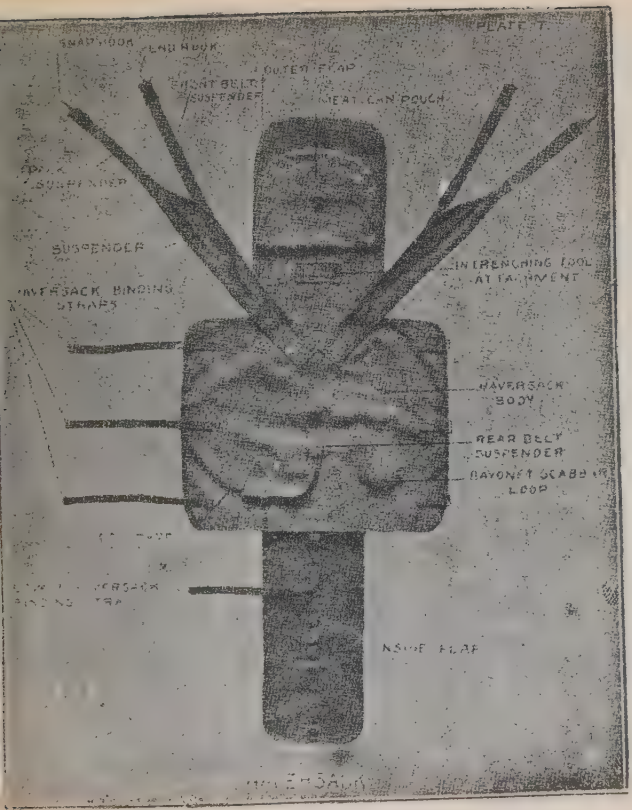
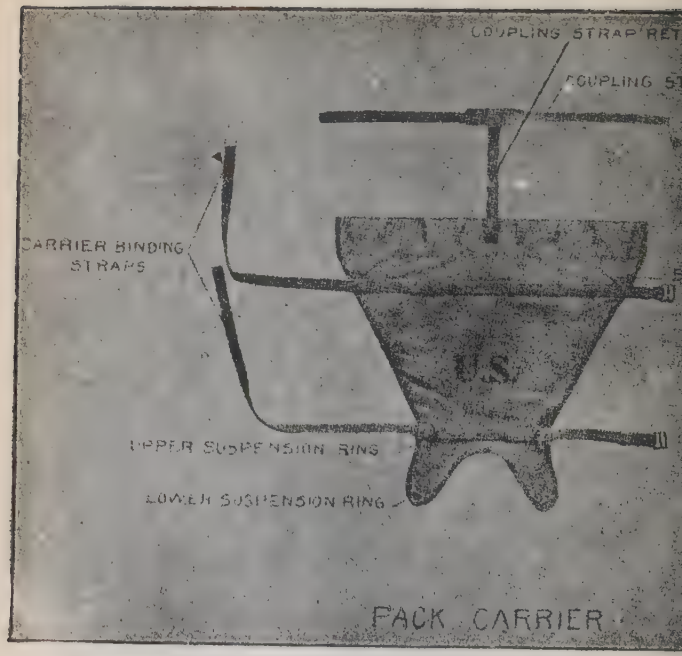
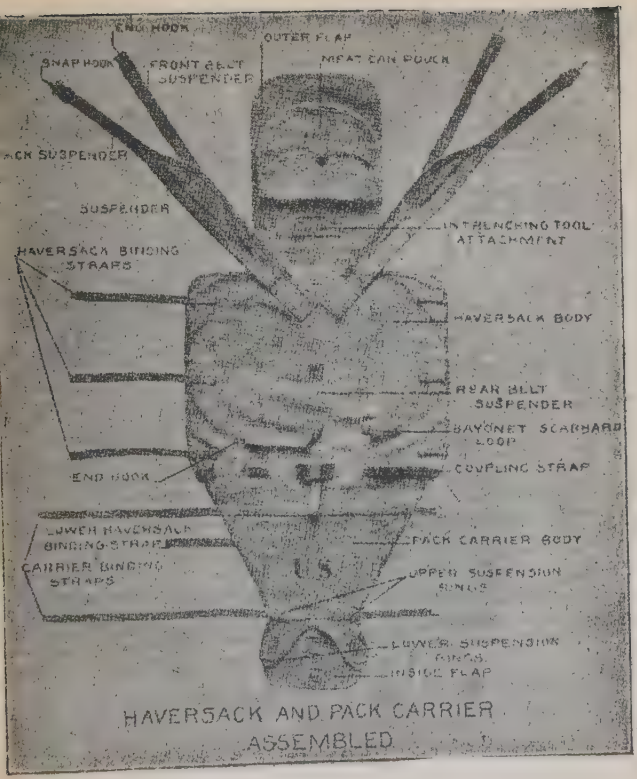

SNAP HOOK
END HOOK
OUTER FLAP
FRONT BELT SUSPENDER
MEAT CAN POUCH
SUSPENDER
SUSPENDER
INTRENCHING TOOL ATTACHMENT
HAVERSACK BINDING STRAPS
HAVERSACK BODY
REAR BELT SUSPENDER
BAYONET SCABBARD LOOP
KNIFE FLAP

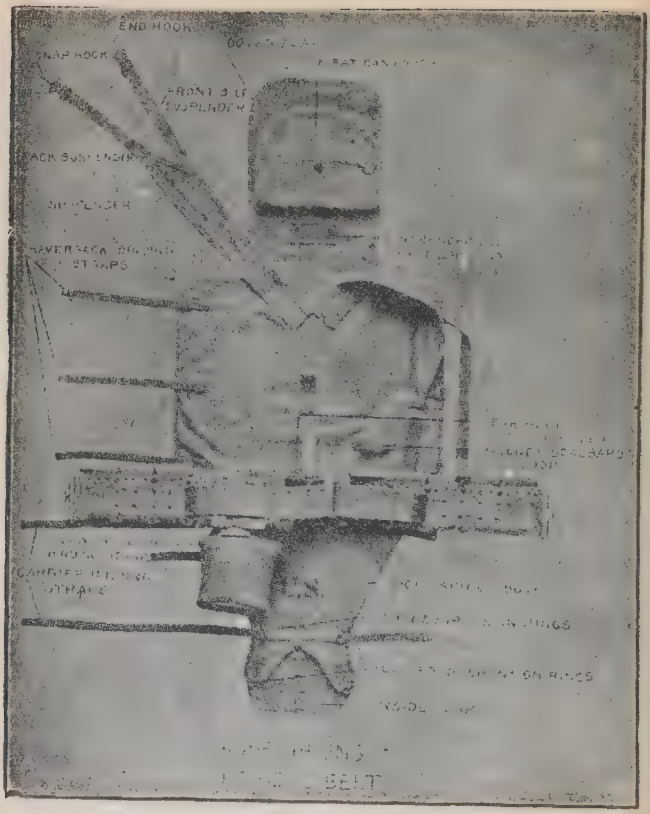
PLATE 8.

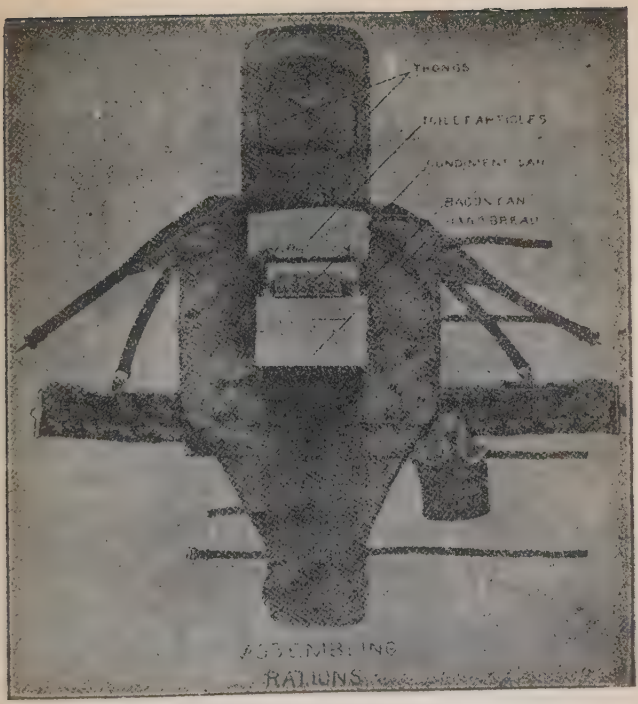

COUPLING STRAP RET
COUPLING ST
CARRIER BINDING STRAPS
U.S.
UPPER SUSPENSION RING
LOWER SUSPENSION RING
PACK CARRIER

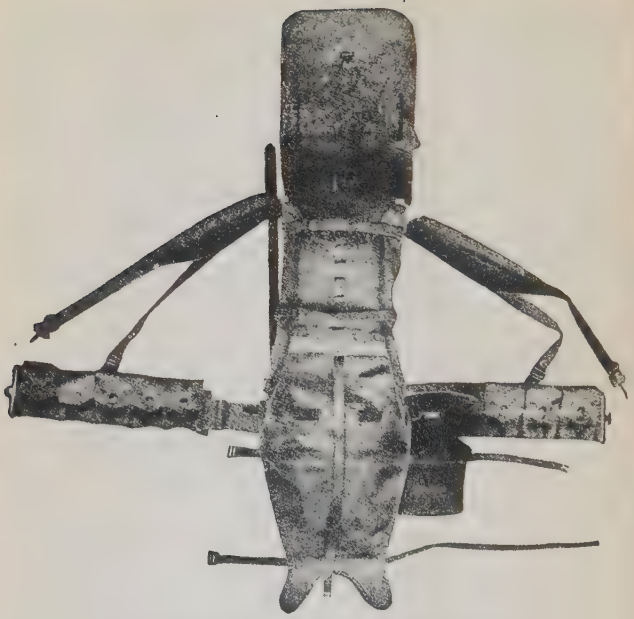


HAVERSACK AND PACK CARRIER ASSEMBLED

PLATE 10.




THONGS
MESS ARTICLES
CONDIMENT CAN
BACON CAN
HARDBREAD
ASSEMBLING
RATIONS



ASSEMBLING PACKED HAVERSACK.

FULL EQUIPMENT.
(Without intrenching tools.)

FULLY EQUIPPED.
(Without the pack.)

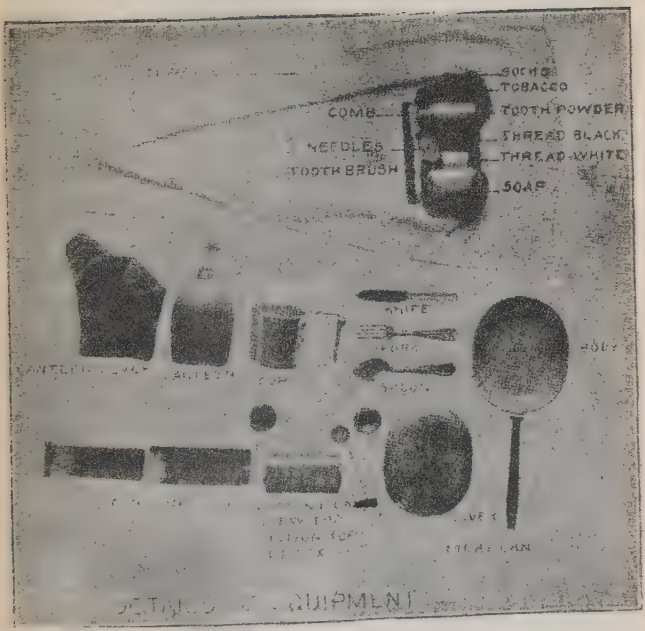
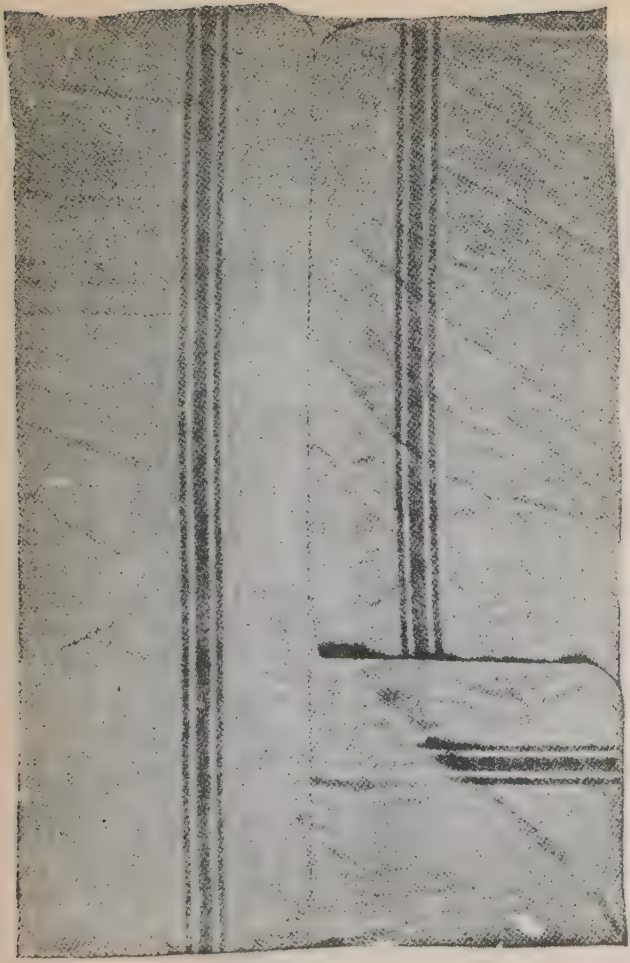

COMB
NEEDLES
TOOTH BRUSH
SOCKS
TOBACCO
TOOTH POWDER
THREAD BLACK
THREAD WHITE
SOAP
KNIFE

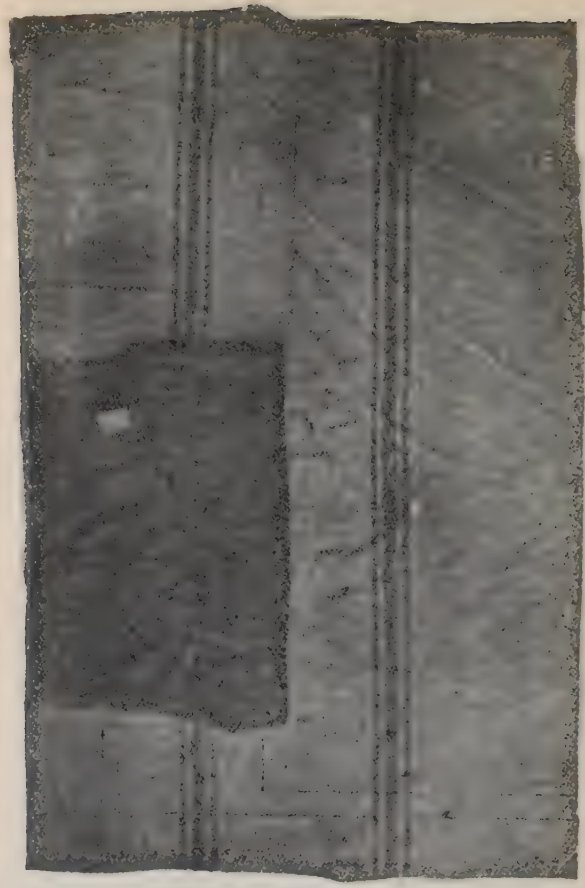
PLATE 16.

RETAINER FLAP
ADJUSTMENT STRAP
POCKET SECTION
FASTNER, FEMALE
CARTRIDGE BELT
FASTNER, MALE
SHOVEL
CARTRIDGE BELT &
INTRENCHING TOOLS



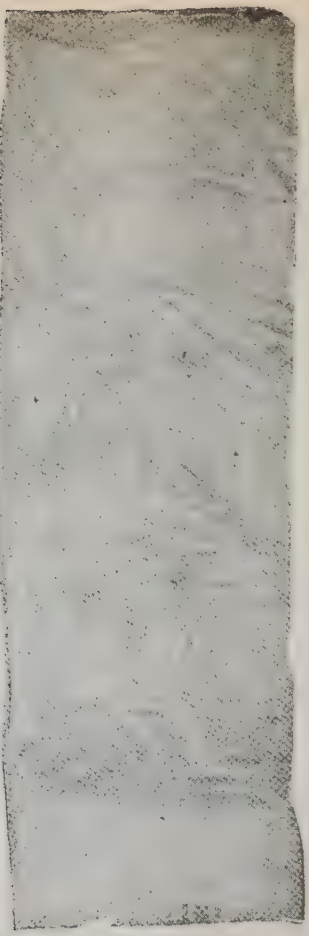
BLANKET FOLDED TO RECEIVE EQUIPMENT.

PLATE 1B.

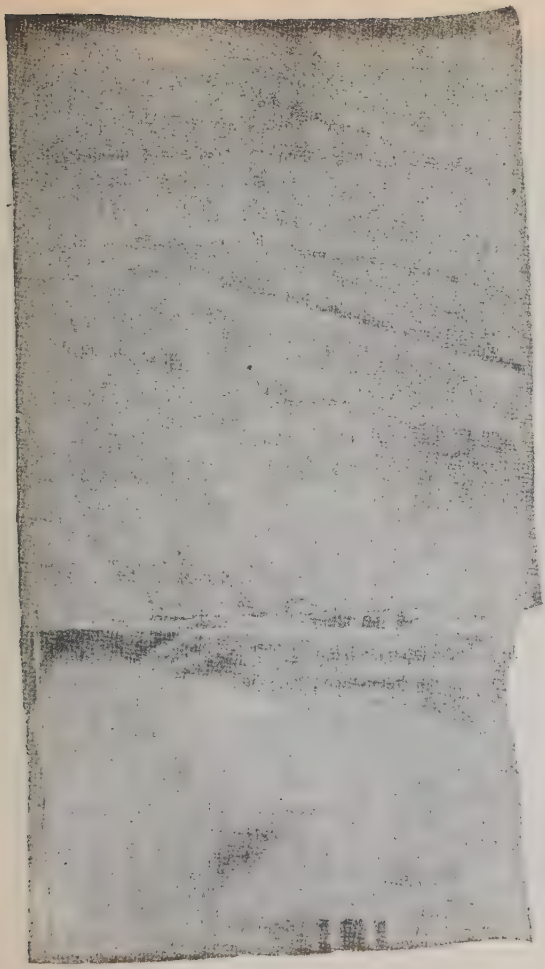


FIRST LAYER OF CLOTHES.

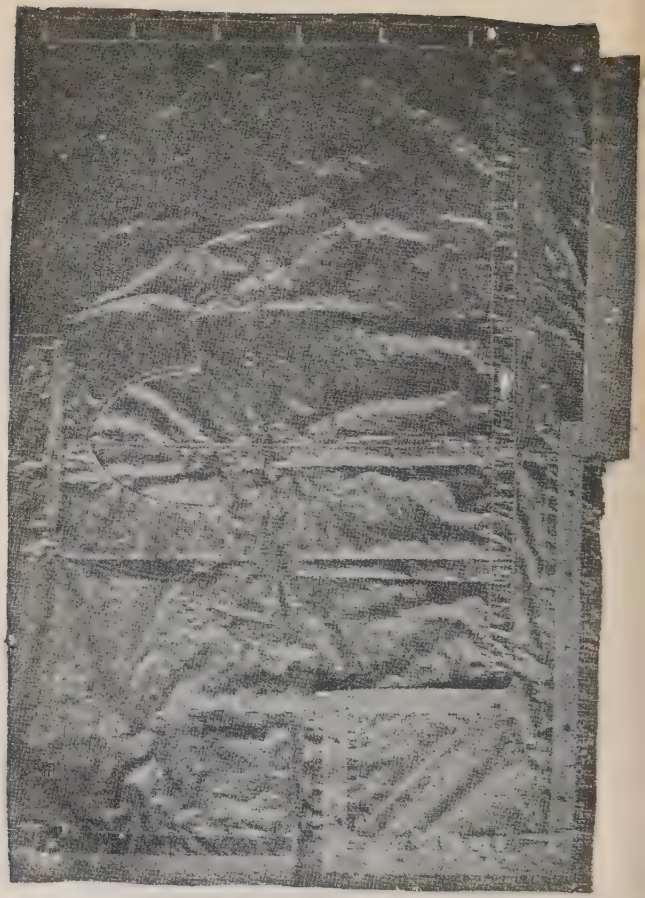
SECOND AND OUTER LAYER OF CLOTHES.



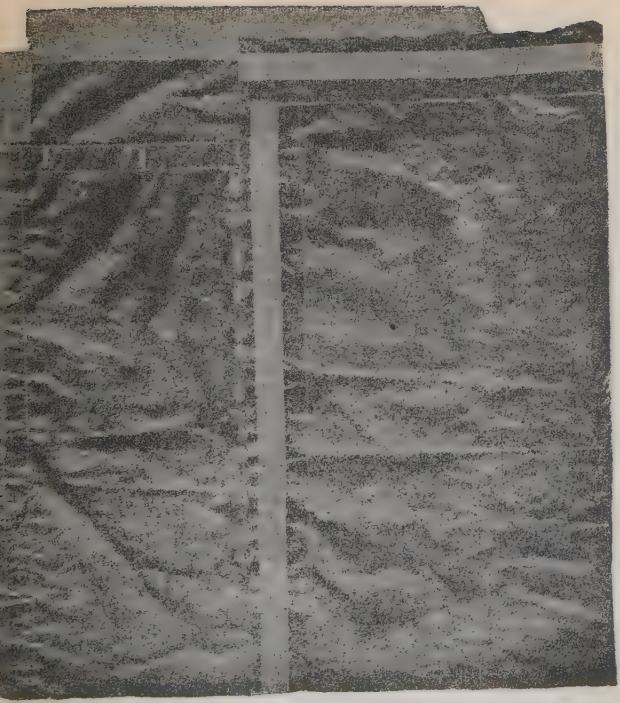
EQUIPMENT LOCKED IN BLANKET.
(Folded once.)



EQUIPMENT LOCKED IN BLANKET.
(Folded twice.)

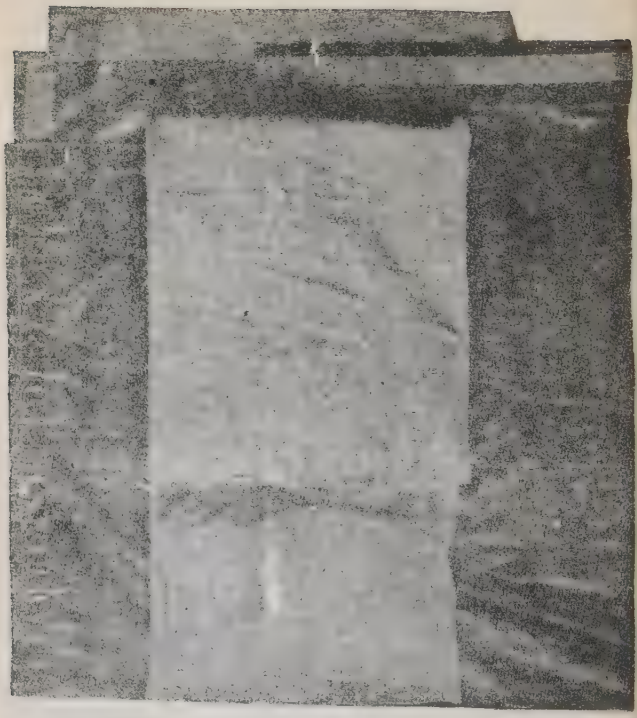


PONCHO FOLDED ONCE, TO RECEIVE BLANKET PACK.



PONCHO FOLDED TWICE, FORMING A SQUARE TO RECEIVE BLANKET PACK.

PLATE 24.



BLANKET PACK LAID ON PONCHO FOR ROLLING.

PART TWO

"W"

ARTILLERY

PART TWO.

"W."

ARTILLERY.

Q. What are FIELD GUNS?

A. They are light guns, usually of, or less than 3 inches in caliber, mounted on field carriages, for operations on shore.

Sometimes they are combined field and boat guns, having a special mount for boat use.

Q. What is the length in calibers, and what is the mark of the 3-inch field piece issued to the service?

A. 1. 3-inch, Mark I, modification I, issued to gun boats.

2. 3-inch, Mark IV, issued to battleships.

Both these guns are 23 calibers (equal 23 times 3, equals 69 inches, equals 5¾ feet in length).

Q. What is the COLT AUTOMATIC GUN?

A. The caliber is .30, the same as that of the service rifle. The cartridges are automatically fed to the gun by means of belts. The belts contain 100, 250, or 500 cartridges each. The gun is capable of producing a continuous fire of 400, or more, shots per minute. The mechanism is operated by the gases generated on discharge. If the finger is held on the trigger, the action of the mechanism ejects the empty cartridge, loads a fresh one from the belt and discharges it. As the gun is very light, it will be found that, with a little practice, it is as easy to handle the gun and direct a stream of bullets on a given object as it is to play a stream of water from a hose. Success with the Colt Automatic Gun depends on perfect familiarity with all its parts and their action.

Q. What other type of automatic machine rifle is used in the Navy?

A. The BENET-MERCIÉ automatic machine rifle; caliber .30.

Q. What principal differences are there between this gun and the Colt?

A. The Benet-Mercié gun is lighter even than the Colt; it uses ammunition that is fed to the gun on flat, tempered steel strips of 30 rounds each. This feature seems to be more satisfactory than loading with belts.

Q. What is a SECTION OF ARTILLERY?

A. An artillery section consists of 3 petty officers, known as first, second and third, and 24 men.

Q. How are the men composing such a section designated and numbered?

A. They are numbered from 1 to 24, and designated as follows:

The Crew:	1 to 3.
The Support:	9 to 16.
The Reserve:	17 to 24.

Q. What, in general, are the duties of the crew, the support, and the reserve?

A. The crew handles the piece.

The support handles the limber, and supplies ammunition to the piece.

The reserve assists at limber or piece, as required, or acts as infantry support on the march.

Q. Describe the drags and the cross-bar.

A. Two drag-ropes, a cross-bar and span, and an extension piece for each drag-rope are supplied for each piece and limber. The drag-ropes are of 2¾-inch manila. Each is fitted with 4 toggles, 5 feet apart. In one end of each drag-rope is spliced a thimble, just outside the last toggle; in the other end is a thimble with a snap-hook which hooks into an eye near each end of the cross-bar. This cross-bar is 3 feet, 6 inches long. A span, 5 feet long, connects the ends of the cross-bar with the trail of the piece or the limber. Each extension piece is of 2-inch manila, 6 feet long, with a toggle at one end and eye splice, 1 foot long, at the other. When no limber is used, the splice of the extension piece is passed through the thimble in the end of the drag-rope, thus lengthening the drag-rope by one toggle. (See plate 1.)

Q. What are the positions of the men at the drags, with and without the limber?

A. See plate 2 and 3.

Q. What is meant by SECTION TO THE FRONT?

A. See plate 6.

Q. When are the pieces IN BATTERY?

A. When they are cast loose for action. See plates 4 and 5.

Q. How many sections of artillery are there in a PLATOON?

A. Two sections.

Q. How many platoons in a BATTERY?

A. Two, or more, not exceeding four.

Q. How many batteries in a BATTALION OF ARTILLERY?

A. Two, or more.

Plate 1.
Drags and
cross-bar.

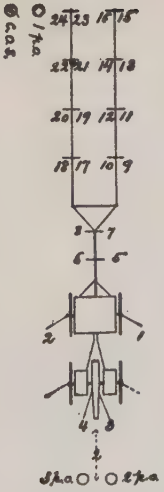


Plate 2.
With limber.
Drag manned.

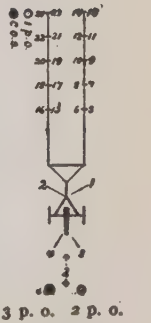


Plate 3.
Drag manned.
Without limber.

Q. How are members of the artillery section armed?

A. The first petty officer and numbers 1 to 4, inclusive, are armed with pistols; the remainder of the men with rifles. On parades, when a long march may be anticipated, artillery sections may be armed with pistols only, or numbers above 4 may carry no arms.

Q. How do the men at the drags carry their rifles?

A. Odd numbered men sling arms with the strap resting on the right shoulder; and even numbered men with the strap on the left shoulder, so that the rifle will be on the off side from the drag. When the pack is not worn, the rifle may be slung diagonally across the back, muzzle pointing toward the drag-rope; the odd numbered men, in this case, wear the strap on the left shoulder, and the even numbered men on the right shoulder.

Q. How execute the command,

1. *Sling.* 2. ARMS?

A. (1) The right arm is passed between the rifle and the sling which rests upon the shoulder, piece in rear of shoulder, muzzle up and barrel to the rear, right hand steadying the piece.

(2) The piece may be slung on either shoulder.

(3) The gun sling should never be so tightly drawn that it cannot be readily adjusted.

(4) To prevent the sling from slipping from the shoulder, the right hand may be shifted to the sling near the armpit.

(5) Arms being slung, any position may be taken by command, the piece being shifted in the most convenient manner. (See plate 7.)

Q. What command is given when it is desired to execute the diagonal sling, previously described?

A. 1. *Diagonal sling.* 2. ARMS. (See plate 8.)

Q. How many men are required to land and operate a Colt Automatic Gun on a field carriage?

A. This piece may be landed and worked by a crew of 4 men. If the piece is to be landed for *distant* duty, either the crew of 8 men, or the crew and the support (16 men), according to circumstances, may be sent, manning a single drag hooked to the piece, each man transporting, in a bag or case supplied for the purpose, a reserve supply of ammunition. The rifles carried by the support and 4 members of the crew would be valuable in case of jams or accidents to the piece.

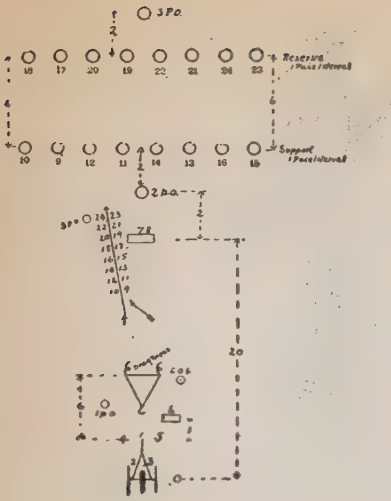


Plate 4.
In battery—without limber.

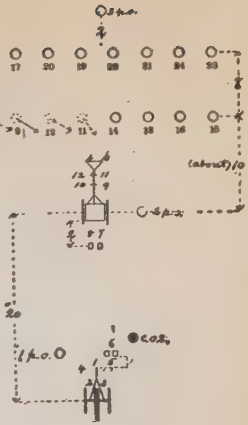


Plate 5.
In battery—with limber.

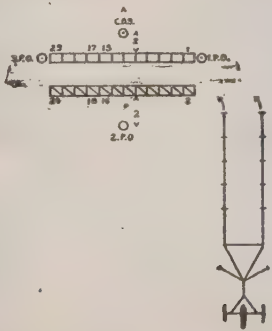


Plate 6.
Section to the front.

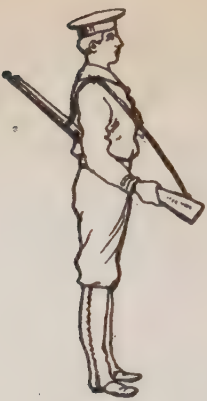
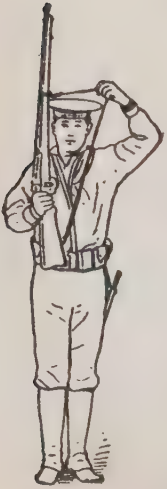


Plate 7.
Sling Arms.



Diagonal sling
(first position).

Plate 8.

Diagonal sling.

PART TWO

"X"

SMALL ARMS

PART TWO.

"X."

SMALL ARMS.

(By Captain William C. Harllee, U. S. Marine Corps). Compiled from Chapter II. Preliminary Instructions, Firing Regulations for Small Arms, U. S. Navy, 1916.

THE RIFLE.

Q. What may happen if the bolt handle is not drawn fully back during magazine fire?

A. A jam.

Q. What may happen if the bolt handle is not pressed well down in loading?

A. A miss-fire.

Q. When the rifle is unloaded, what precaution must you take to be able to operate the bolt in going through the motion of rapid fire?

A. Turn the magazine cut-off *down* or *off*.

CLEANING AND CARE OF THE RIFLE.

Q. In which end of the rifle bore is the cleaning rod inserted when cleaning?

A. The breach end.

Q. After removing the fouling, what is done to the bore?

A. It is lightly oiled.

Q. How are the metal and working parts of a rifle cared for?

A. Clean with a dry cloth and then lightly oil by a slightly oiled cloth.

Q. Why should there be no surplus oil on a rifle?

A. It makes the rifle disagreeable to handle, and collects dirt and grit.

Q. What may happen if there is too much oil in the bolt mechanism?

A. You may get a splash of oil in the face and eyes when you fire.

Q. What part of the rifle must be entirely free from oil for rapid fire?

A. The bolt handle.

Q. What kinds of oil may be used on rifles?

A. Cosmoline, or any oil that will not rust metal.

Q. What material must not be used in cleaning small arms?

A. Emery or any material which scratches metal.

Q. What must be done before a rifle is to be stowed away?

A. It must be cleaned every day until the bore stops "sweating" out the fouling, which is acid and causes rust.

Q. How should it be oiled when it is to be stored?

A. Well coated with heavy oil.

TARGETS.

Q. What is the name of the regular target used in the Navy?

A. Target "B."

Q. What are the outside dimensions of the target?

A. Six by six feet.

Q. What is the diameter of the bull's-eye?

A. Twenty inches.

Q. About how far apart are the rings?

A. About nine inches.

Q. What does a hit in the bull's-eye count?

A. Five.

Q. What other values are there on the target?

A. Four, three and two.

Q. What kind of disk is used to mark each value?

A. White for a five; red for a four; white and black for a three; and black for a two.

Q. What kind of a disk is used to signal a miss, and how is it used?

A. A red disk is moved across the target and back.

Q. If a hit touches the bull's-eye, or one of the rings, what value has it?

A. The same as if it were inside the bull's-eye or ring.

Q. If a smaller target than the target B is used in qualification courses, what allowance is made for a smaller target?

A. None.

Q. What is the "o'clock" of a hit above the bull's-eye?

A. Twelve o'clock.

Q. What is the "o'clock" of a hit to the right of the bull's-eye?
A. Three o'clock.
Q. Where would an "eight o'clock" hit be?
A. Below, and to the left of the bull's-eye.

AIMING.

Q. Which kind of sight is recommended for all firing?
A. The peep sight.
Q. What is the best size of a peep?
A. The largest size.
Q. Where should the eyes be placed in aiming?
A. As near the peep as possible.
Q. How should the bull's-eye appear in the peep?
A. In the middle of it.
Q. Where is the tip of the front sight held?
A. In the middle of the peep, and on the spot where you hope to hit.
Q. What should be done both to front and rear sights before firing?
A. They should be blackened.
Q. What should be done to sights before they are blackened?
A. All oil or grease should be removed.
Q. Name two materials used to make smoke for blackening sights.
A. Candles or oiled rags.

SIGHT-SETTING.

Q. Opposite the peep hole there are small scratched marks; what are these for?
A. They are set opposite the proper range reading.
Q. The figures on the sight leaf refer to what marks?
A. The marks *below* the figures.
Q. When there are no marks for settings between the even hundred, what is done?
A. The setting is carefully estimated.
Q. What are the marks on the windgauge?
A. Points.
Q. What is the value of a point?
A. Represents a lateral deviation of 4 inches for each 100 yards in range.
Q. When there is a wind, in which direction do you set the windgauge?
A. To the windward.

Q. After you have hit the target, and when you wish to change the sights so as to bring the next shot towards the bull's-eye, how do you move the sights?

A. In the same direction that you wish to move the point of hit.

Q. Suppose your hit was high, and towards the right, how would you change the sights?

A. Lower the elevation, and move the windgauge towards the left.

Q. With your sight set at 500 yards, you hit near the bottom of the target, and you decide to change the sights 50 yards, where will you set your sight?

A. 550 yards.

Q. Your windgauge is set at ½ right, and you wish to move it towards the right the amount of ½ of a point, where will you then set the windgauge?

A. One point right.

Q. Your windgauge is at one point right, and you wish to make a change towards the left of ¾ of a point, where will you set your windgauge?

A. One-fourth right.

Q. With windgauge set at ¼ right, you decide to move it towards the left ½ of a point, where will you set it?

A. One-fourth left.

Q. What should the coach do every time a man sets or changes his sights?

A. Inspect the setting to see whether it is correctly set.

HOLDING THE RIFLE.

Q. What two reasons are there why men should not be permitted to fire left-handed?

A. The rifle is made to be fired right-handed and left-handed shooters interfere with their neighbors on a firing line.

Q. With the loop of the sling fastened to the lower band swivel, where, in the case of the average man, should the lower bight of the sling be?

A. Even with the comb of the stock.

Q. What kind of men use slightly longer sling?

A. Men with short, stout arms.

Q. What is the position of the sling on the left arm?

A. Well in the armpit.

Q. What is the position of the left hand?

A. Over the sling, well under the rifle, and all the way out to the swivel.

Q. How about the fingers of the left hand?
A. They do no work at all; the rifle rests hard in the flat of the hand.
Q. In the prone position, at about what angle to the firing line does the firer lie?
A. Forty-five degrees.
Q. What is the position of the legs?
A. Legs are spread wide apart.
Q. Heels?
A. Heels are turned inboard.
Q. Left elbow?
A. Well to the front and well to the right.
Q. Cheek?
A. Right cheek hard against the small of stock.
Q. Right thumb?
A. Thumb along, and not across, the stock.
Q. Right eye?
A. Right eye all the way up to the comb of the firing pin, as close to the peep as possible.
Q. How do you raise or lower the muzzle in this position?
A. Move the right elbow *out* to raise, and *in* to lower the muzzle.
Q. How do you hold the rifle in reloading in rapid fire?
A. Keep the butt in the shoulder, then lowering the muzzle to the right will enable you to work the bolt.
Q. What parts of the body need special protection?
A. The right shoulder and both elbows.
Q. In kneeling, what is the position of the right knee?
A. It points directly to the right, or along the firing line.
Q. The left elbow?
A. The point of the left elbow is *over* the knee.
Q. The body?
A. Lean the body well forward.
Q. In the squatting position, what is the position of the feet?
A. Both feet are flat on the ground.
Q. The elbows?
A. Both elbows rest on the knees, the points of the elbows *over* the knees.
Q. In the standing position, how is the recoil taken?
A. Do not try to meet or resist it. Let the body give way to it.
Q. In the standing position, how does the place for the left hand differ from all other positions?
A. The left hand is drawn back to near the trigger guard.

Q. On what kind of service is the sitting position useful?
A. Outpost service.
Q. What is the position of the legs?
A. The muscles of the leg should be at rest and not strained.
Q. The body?
A. Lean the body well forward.
Q. The elbows?
A. Both elbows must rest on the knees or legs.
Q. What is the effect of canting the rifle?
A. The bullet will strike in the direction of the cant.
Q. What must you remember about breathing while aimng?
A. Let the breath out, and do not breathe while aiming.
Q. How is the rifle fired?
A. Take up the slack of the trigger, and then squeeze it as gradually as possible.
Q. What must you do to get acquainted with the trigger squeeze of a rifle?
A. Practice it several times with the rifle unloaded.
Q. How long should you continue to aim?
A. A man should make up his mind to continue aiming while the rifle is firing. This will keep him steady on.
Q. What is meant by "calling the shot?"
A. Saying something about the aim as soon as the rifle is fired, and before the target is marked.
Q. What is the object of acquiring the habit of calling the shot?
A. It is a sure cure for flinching and gun-shyness. The most experienced riflemen will occasionally flinch unless there is something in the nature of "calling the shot" to require their attention.
Q. On the range, what precaution is taken to make sure that rifles are not loaded?
A. The bolt is kept open.
Q. In slow fire when is the rifle loaded?
A. Not until immediately before it is to be fired.
Q. What is the rule about pointing or aiming rifles on ranges?
A. Never point or aim the rifle except when on the firing line, full abreast of the fire, and then only in the direction of the targets.

NOTE.—The number of the above 84 questions can be increased to 100 by calling the names of a number of parts of the rifle and requiring the parts to be pointed out, or by pointing out parts of the rifle and requiring them to be named.

Q. What PRECAUTIONS must be observed IN HANDLING THE PISTOL?

A. 1. Never point a pistol, whether it is loaded or not, at any living object unless you want to shoot it.

2. The majority of accidents occur with pistols that "were not loaded."

3. While at the firing point, always keep the pistol pointing up, or at the target.

4. A safe background is indispensable in actual firing. A good background is an earth embankment, an open expanse of water, or, if it is not closer than 50 yards, a high stone or brick wall. If nearer than this, the bullet is liable to rebound. If a wall is used, the target should be placed some 10 or 15 yards from it, to prevent it from being pierced from the rear by rebounding bullets or splinters.

5. Never leave, even for a moment, a loaded pistol where any one can touch it.

6. Never pick up a pistol without opening the chamber to see whether it is loaded.

Since the pistol, owing to its short length and the ease with which it can be improperly handled, is the most dangerous fire-arm in existence, it is especially important that *every man, irrespective of rating, who is armed with the pistol in action, should know how to use it intelligently.* This knowledge can be acquired only by a *thorough* understanding of the mechanism of the fire-arm, and by constant and careful practice at every opportunity for firing.

Q. Learn to locate the following parts of the pistol:

1. Receiver.
2. Barrel.
3. Slide.
4. Plunger tube.
5. Slide stop plunger.
6. Plunger spring.
7. Safety lock plunger.
8. Slide stop.
9. Rear sight.
10. Front sight.
11. Link.
12. Link pin.
13. Barrel bushing.
14. Recoil spring.
15. Recoil-spring guide.
16. Plug.
17. Extractor.
18. Ejector.
19. Ejector pin.
20. Firing pin.
21. Firing-pin spring.
22. Firing-pin stop.
23. Hammer.
24. Hammer pin.
25. Hammer strut.
26. Hammer-strut pin.
27. Mainspring.
28. Mainspring cap.
29. Mainspring-cap pin.
30. Sear.

31. Sear spring.
32. Sear pin.
33. Disconnector.
34. Trigger.
35. Grip safety.
36. Safety lock.
37. Mainspring housing.
38. Housing pin.
39. Housing-pin retainer.
40. Lanyard loop.
41. Lanyard-loop pin.

42. Magazine tube.
43. Magazine base.
44. Magazine pins (2).
45. Magazine loop.
46. Magazine spring.
47. Magazine follower.
48. Magazine catch.
49. Magazine catch spring.
50. Magazine catch lock.
51. Stocks, right and left.
52. Stock screws (4).
53. Screw bushings (4).

Magazine

A. See plates.

NOTE.—The Automatic Pistol is here discussed in detail for the benefit of all men who are, by the drill regulations, required to use it.

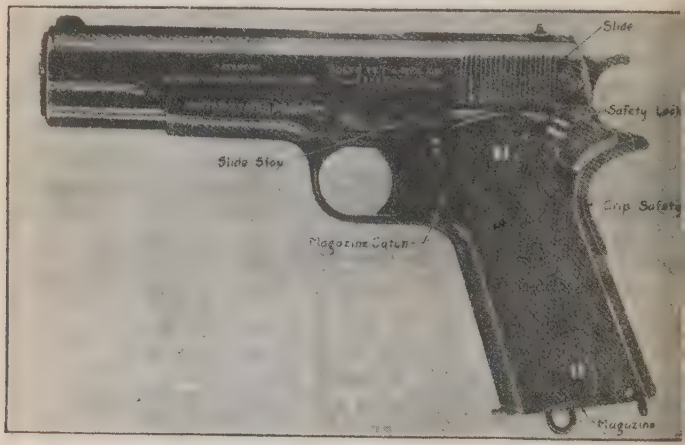


Plate 2.

Q. Describe the method of operation of the Automatic Pistol?

A. Place a loaded magazine in the handle. Draw the slide (3) fully back, and release it, thus bringing the first cartridge into the chamber (if the slide is open, push down the slide

Plate 3.

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Plate 4.

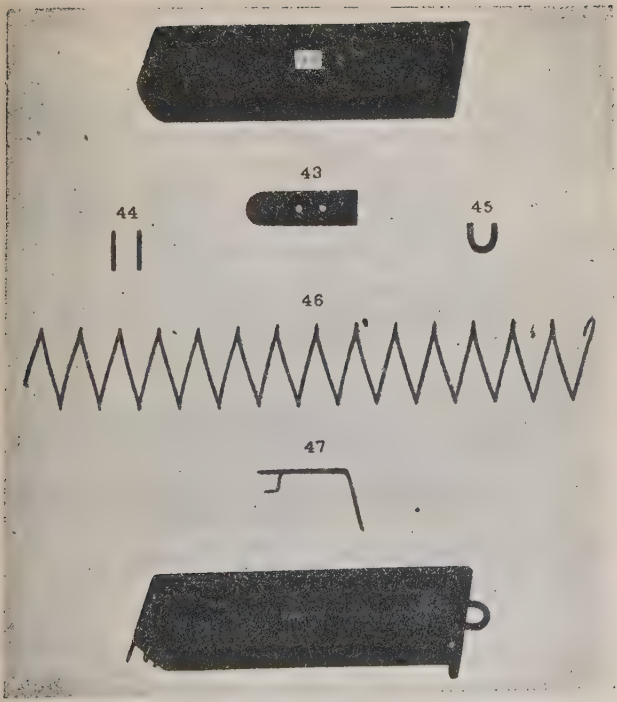


Plate 5.

stop (8) to let the slide (3) go forward). The hammer (23) is thus cocked and the pistol is ready for firing.

If it is desired to make the pistol ready for instant use and for firing with the least possible delay the maximum number of shots, draw back the slide (3), insert a cartridge by hand into the chamber of the barrel (2), allow the slide (3) to close, then lock the slide (3) and the cocked hammer (23) by pressing the safety lock (36) upward, and insert a loaded magazine. Since the slide (3) and hammer (23) are thus positively locked, the pistol may be carried safely at full cock, and it is only necessary to press down the safety lock (36) (which is located within easy reach of the thumb) when raising the pistol to the firing position.

Q. What is the purpose of the grip safety?

A. The grip safety (35) is provided with an extending horn, which not only serves as a guard to prevent the hand of the shooter from slipping upward and being struck or injured by the hammer (23), but also aids in accurate shooting by keeping the hand in the same position for each shot. The grip safety furthermore permits the lowering of the cocked hammer (23) with one hand by pressing in automatically on the grip safety when the hammer (23) is drawn slightly beyond the cocked position.

In order to release the hammer (23), the grip safety (35) must be pressed in before the trigger (34) is pulled.

Q. With what SAFETY DEVICES is the Automatic Pistol provided?

A. It is impossible for the firing pin (20) to discharge, or even to touch, the primer, except on receiving the full blow of the hammer (23).

The pistol is provided with 2 automatic safety devices:

1. The (automatic) disconnector (33) which positively prevents the release of the hammer (23) unless the slide (3) and barrel (2) are in the forward position and safely interlocked: this device also controls the firing and prevents more than one shot from following each pull of the trigger (34).

2. The (automatic) grip safety at all times locks the trigger (34) unless the handle is firmly grasped and the grip safety (35) pressed in.

In addition, the pistol is provided with a safety lock (36) by which the closed slide (3) and the cocked hammer (23) can be positively locked in position at will.

Q. With how many cartridges may the magazine be charged?

A. With any number from one to seven.

Q. Describe briefly the automatic action of the pistol.

A. On pulling the trigger (34), the sear (30) is moved and the released hammer (23) strikes the firing pin (20) which transmits the blow to the primer of the cartridge. The pressure of the gases generated in the barrel (2) by the explosion of the powder in the cartridge, is exerted in a forward direction against the bullet, driving it through the bore, and in a rearward direction against the face of the slide (3), driving the latter and the barrel (2) to the rear together. The downward swinging motion of the barrel (2) unlocks it from the slide (3), and the barrel (2) is then stopped in its lowest position. The slide (3) continues to move to the rear, opening the breech, cocking the hammer (23), extracting and ejecting the empty shell and compressing the recoil spring (14), until it (the slide) reaches its rearmost position when another cartridge is raised in front of it and forced into the chamber of the barrel (2) by the return movement of the slide (3) under pressure of the recoil spring (14).

Q. What is the position of the slide when the magazine has been emptied?

A. When the magazine has been emptied, the slide is locked in the open position; this serves as an indicator to remind the shooter that the empty magazine must be replaced by a charged one before the firing can continue.

Q. How release the empty magazine from the handle?

A. Pressure upon the magazine catch (48) quickly releases the empty magazine from the handle and permits the insertion of a loaded magazine.

Q. How release the slide from the open position?

A. Press upon the thumb piece of the slide stop (8) when the slide (3) will go forward to its closed position, carrying a cartridge from the magazine previously inserted in the barrel and making the pistol ready for firing again.

Q. What are the important points to remember in handling the automatic pistol?

A. 1. Never place the trigger finger within the trigger guard until you intend to fire, and the pistol is pointed toward the target.

2. Do not carry the pistol in the holster with the hammer cocked and safety lock on, except in case of an emergency; and when the pistol is so carried, exercise care to see that the safety lock does not become disengaged during the removal of the pistol from the holster.

3. The pistol must be kept clean, free from rust, and properly oiled. Excessive oil left in the mechanism will cause the parts to gum and work stiffly.

4. In inserting the magazine, be careful to make sure that it engages with the magazine catch.

5. Relieve pressure entirely from the trigger after each shot in order that the trigger may re-engage with the sear.

6. To remove cartridges not fired, disengage the magazine slightly and then extract the cartridge in the barrel by drawing back the slide.

7. Be careful to see that the disconnector is properly assembled to the sear.

8. Do not snap the hammer when the pistol is partially disassembled.

9. Do not remove the stocks, as the pistol can be dismounted and assembled without removing them.

10. Use no hammer, either in assembling or dismounting.

11. Reasonable care must be taken to see that the magazine is not dented or otherwise damaged.

12. Never insert the magazine and strike it smartly with the hand to force it home, as this may spring the base, or the inturning lips at the top. Insert the magazine by a quick, continuous movement.

PART TWO

"Y"

ORDNANCE AND GUNNERY

PART TWO.

"Y."

ORDNANCE AND GUNNERY.

Q. What is the difference between "Ordnance" and "Gunnery?"

A. "Ordnance" is a word that means the guns, ammunition and appliances on board, by means of which a ship fires at the enemy. "Gunnery" is the science of using this material to the best advantage.

I. ORDNANCE.

Q. What is meant by the NOMENCLATURE of a gun?

A. The nomenclature means the names of the various parts of a gun, mount and accessories. The exact name of every part is laid down in ordnance publications, and the correct names of the principal parts should be familiar to every member of the crew.

Q. What is meant by the CALIBER of a gun?

A. It is the diameter of the bore of the gun measured at the muzzle.

Q. What is the BORE OF A GUN?

A. It is the cylindrical hole cut, or left, in the direction of the length and in the axis, to form a path for the projectile. It serves also to contain the powder charge before firing, as well as to confine the powder gases after firing. In all modern breech-loading guns, the bore extends from the rear face of the gun tube to the muzzle face.

Q. How is the length of a gun expressed?

A. The length is expressed in terms of the caliber. For example, a 12-inch, 45 caliber gun is forty-five times twelve inches, equal 45 feet long.

Q. Into what three general classes are the guns on board ship divided?

A. Turret guns, intermediate guns, secondary guns.

Q. What are TURRET GUNS?

A. Turret guns are guns mounted in turrets.

Q. What are INTERMEDIATE GUNS?

A. Guns of 4-inch to 7-inch caliber inclusive.

Q. What are SECONDARY GUNS?

A. Secondary guns are 3-inch, 6-pounder, and 3-pounder guns.

Q. What is meant by the MARK of a gun?

A. Each different design, or considerable modification of an old design, is called a new MARK of that caliber. The "Mark" of a gun, and the "Mark" of its mount have no connection with each other. For example, a Mark VII. 12-inch gun might be mounted on a Mark VIII. mount. Slight changes in design of guns are called MODIFICATIONS. For example, we speak of a 5-inch Mark VI., Mod. 1. (Mod. being the abbreviation for "modification.") The first design of any gun or mount is called Mark I.

Q. What are the most recent types of guns in use?

A. The mark, caliber, length in calibers, weight of projectile, weight of charge and various other data for the types of guns in actual use are given in the following table:

NOTE.—In the latest battleships, the turret guns (12 or 14 inches in caliber) are classed as the Main Battery. The 5-inch Battery is called the Torpedo Defense Battery.

Q. Referring to the construction of a gun, what is meant by a BUILT-UP GUN?

A. A "built-up gun" is a term applied to all guns made up of different parts, however assembled. The form of built-up gun used in the Navy is the "hooped gun," that is, one built up by heat shrinkage, the exterior parts being heated to go over the interior parts. The material used is *nickel steel*. Most guns are built at the Naval Gun Factory, Washington, D. C., but private plants such as the Bethlehem and the Midvale Steel Companies, and the United States Army Arsenal, Watervliet, N. Y., build a certain number. The accompanying plate shows a 45-caliber 14-inch gun, Mark I., assembled; the various parts that go to make up the gun are shown in detail.

1. A modern built-up gun is composed of a TUBE and HOOPS. The parts are designated as the A tube; B1, B2-, C1, C2-, D1-, etc., hoops.

2. The B1 hoop, usually called the JACKET, is immediately over the rear end of the tube and extends well forward on it.

3. Hoops over the forward part of the tube are called CHASE HOOPS.

4. Hoops over the jacket are called JACKET HOOPS.

5. LOCKING HOOPS are those which hold two adjacent parts together. Inner ones are shrunk on; outer ones may be screwed or shrunk on.

Q. What is the BREECH of the gun?

A. The rear end of the gun.

Q. What is meant by a BREECH-LOADING GUN?

A. One in which the projectile and the charge are loaded through an opening in the breech end of the bore. This opening is closed, when the gun is loaded, by a breech plug. All Navy guns are loaded in this way.

Q. What is the MUZZLE of the gun?

A. The front end, whence the projectile issues.

Q. What is the BODY OR CYLINDER of the gun?

A. It is that part over the chamber (and in high-power guns over part of the rifled bore), where the metal is the thickest. The outside diameter is usually about the same for the above distance, and this fact gives rise to the name, *cylinder*.

Q. What is meant by the CHASE of a gun?

A. It is the sloping portion forward of the cylinder extending to the muzzle, whether in one taper or in stepped tapers caused by the hoops.

Q. What is the BELL-MUZZLE?

A. In long, high-powered guns, the end of the chase forms a curve at the muzzle of increased diameter, forming what is

known as the "bell muzzle." The metal is increased at that point to give greater strength in order to prevent enlargement of the bore due to high muzzle pressures from smokeless powder. It is easily seen that the metal at the end of a tube has not the same support as a section further to the rear.

Q. What is the CHAMBER of a gun?

A. It is the seat of the charge of powder, and is, consequently, the rear end of the bore. This term is also used for guns loading a metallic cartridge-case. Modern breech-loading guns have cylindrical chambers larger than the bore, the forward end being coned down to the diameter of the bore.

Q. What are the parts of a gun as viewed from the outside?

A. Breech, muzzle, body or cylinder, and chase.

Q. What are TRUNNIONS?

A. *Formerly,* trunnions were two cylindrical arms on the sides of a gun at right angles to the axis, to support the gun on the carriage. *All guns are now made trunnionless,* being supported by slides within which the gun recoils; the recoil is checked by hydraulic cylinders attached to the slides, the pistons of the cylinders are connected by their rods to a yoke on the gun. These slides have trunnions that rest in seats on the gun carriage.

Q. Why is the gun metal thickest at the body?

A. Because at the point over the seat of the powder charge the pressure of the powder gas is the greatest. The powder pressure gradually decreases toward the muzzle and the strain on the gun becomes less; hence the gun may taper forward.

Q. What is RIFLING?

A. A number of spiral grooves cut on the surface of the bore. The raised portions between the grooves are called "lands."

Q. What is the object of rifling a gun?

A. To give rotation to the projectile about its longer axis. Rotation is necessary to prevent the shell from "tumbling"; that is, to cause the shell to fly point first.

Q. What is a PROJECTILE?

A. It is the missile fired from a gun.

Q. How does the rifling impart a twist to the projectile?

A. A rifling band—called a "rotating band"—is secured in an undercut score around the projectile near the base. The rotating band is made of copper; its diameter is equal to the diameter of the bore at the base of the grooves of the rifling. When the gun is fired, the lands of the rifling cut into the surface of this soft metal band causing it, and hence the projectile to which it is secured, to turn in the bore.

Q. What is the firing or powder CHARGE?

A. It is the charge of explosive placed in the chamber of a gun which, on firing, forces the projectile out of the gun.

Q. What kind of powder is used for this purpose?

A. Smokeless powder.

Q. What is SMOKELESS POWDER?

A. It is a powder which, on combustion, gives but little smoked. The service powder is made of ordinary guncotton soluble in a mixture of ether and alcohol; a pulp is thus formed which is pressed out into grains. Navy smokeless powder varies in color from a light lemon to a deep brown, almost black. It is very tough and burns regularly and progressively.

Q. What is a PRIMER?

A. It is a contrivance by means of which the firing charge in the gun is ignited.

Q. What types of primers are in use in the Navy?

A. *Combination electric and percussion* primers are used for all heavy and intermediate guns. *Percussion* primers only are supplied to secondary battery guns.

Q. What are the essential features of a COMBINATION PRIMER for a heavy gun?

A. The primer stock is made of bronze; it is cylindrical in shape, the diameter of the base being about six-tenths of an inch and the length of the primer two inches. The primer is shown in the accompanying plate. The operation, when firing by percussion, is as follows: A plunger in the base of the primer ordinarily has its point just touching a Winchester primer cap containing fulminate of mercury. The *primer firing charge,* consisting of about 40 grains of rifle powder, is in the lower part of the primer stock. When the gun is fired by percussion, the firing pin strikes the base of the plunger, and the plunger point, in turn, strikes the fulminate of mercury cap which fires the primer charge and, consequently, ignites the firing charge in the gun. To provide for electric firing, the percussion firing cap and the plunger are insulated from the current by means of an ebonite bushing. When the breech of the gun is closed, the firing pin makes contact with the base of the primer. The current passes from the firing pin through the primer stock down through a short platinum wire with a wisp of guncotton around it. One end of this platinum wire passes through a cavity filled with rifle powder, while the other end is secured to the primer stock. Consequently, when the firing key of the gun is closed, the circuit is complete through primer, gun and carriage through metal of ship to battery. At the instant of closing the firing key, the current passes through

the primer stock, heats the platinum wire, ignites the guncotton and powder, and fires the charge.

The primer just described is used for heavy guns firing separate ammunition; and it is, of course, inserted in the firing lock by a member of the gun's crew. Other types of primers, however, differ only in details. *Combination primers for rapid-fire guns* and all percussion primers are fixed in the base of metallic cartridge cases. In general, primers fixed in the cartridge cases are much longer than those designed for use with separate ammunition. If you get firmly fixed in your mind the details of the primer just described and illustrated, you will have no difficulty in understanding the action of any primer.

Q. What is FIXED AMMUNITION?

A. It is a term used to indicate that the primer, charge and projectile are fixed in a cartridge case, forming a complete cartridge.

Q. What is SEPARATE AMMUNITION?

A. It is a term used to indicate that the charge and the projectile are separate, although the charge may be in a metallic cartridge case.

Q. What is meant by a B. L. R.?

A. Any *breech-loading rifled* gun of, or above, 4 inches in caliber, *using separate ammunition without a metallic cartridge case.*

Q. What is meant by a RAPID-FIRE GUN?

A. It is a single shot breech-loading rifled gun of greater caliber than small arms, using fixed ammunition or a metallic cartridge case, and having a quick acting breech mechanism operated by a single movement of the hand, or automatically opened by the discharge of the gun.

Q. What is a SEMI-AUTOMATIC GUN?

A. A single shot R. F. (rapid fire) gun in which one operation of the hand is required for each fire, the other operations being performed automatically by the discharge of the gun.

Q. What is an AUTOMATIC GUN?

A. One in which, the first shot having been fired by hand, the operations of ejection, loading, and firing are performed automatically and continuously by the explosion of the cartridges so long as ammunition is properly fed, and the trigger held back.

Q. What is a MACHINE GUN?

A. A gun of small-arm caliber, from which a continuous rapid fire can be maintained by operating its mechanism either by hand or by motor power, causing successively, loading, firing and extraction of the empty case.

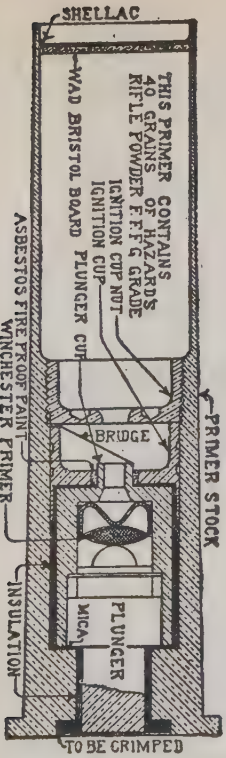

SHELLAC
THIS PRIMER CONTAINS 40 GRAINS OF HAZARDS RIFLE POWDER F.F.F.G GRADE
IGNITION CUP NUT
IGNITION CUP
WAD BRISTOL BOARD PLUNGER CUP
ASBESTOS FIRE PROOF PAINT
WINCHESTER PRIMER
BRIDGE
PRIMER STOCK
MICA
PLUNGER
INSULATION
TO BE CRIMPED

Plate 2.

Q. What are FIELD GUNS?

A. Light guns, usually of, or less than 3 inches in caliber, mounted on field carriages for operations on shore. When of R. F. gun type, and specially designated as "field," they are usually shorter, lighter in weight, and less in power than ship's guns of the same caliber. Sometimes they are combined field-and-boat-guns, having a special mount for boat use.

Q. What kind of projectiles are used in the service?

A. 1. Armor-piercing shell.
2. Common shell.
3. Shrapnel.
4. Blind shell for target practice.

Q. What is an ARMOR-PIERCING (A. P.) SHELL?

A. It is a shell intended to penetrate armor. The armor it will penetrate depends, of course, on the caliber of the shell, but in all cases it may be depended upon to penetrate considerably deeper than the common shell of equal caliber. It is cylindrical, with a solid pointed ogival-shaped head. A soft steel cylindrical cap is fitted on the point of the armor-piercing shell. When the shell strikes armor, the first shock of impact bends the hard plate in, while the projectile pierces its cap; the hard point of the shell then strikes the hard surface of armor when the latter is bent in nearly to its breaking-point, and the shell enters easily.

Q. What is a COMMON SHELL?

A. A common shell is of the same general shape as an armor-piercing shell, but it does not carry the soft steel cap.

Q. What material is used in the manufacture of armor-piercing and common shells?

A. Forged steel.

Q. What is a BURSTING CHARGE?

A. It is a charge of explosive placed *inside a shell* for the purpose of bursting it when it strikes an enemy's ship, and thus increasing its effect. Armor-piercing and common shell of every caliber are loaded with a bursting charge consisting of black, prismatic small-grained powder, known as shell powder or with an explosive known as "Explosive D," or *dunnite*.

Q. Where, in the shell, is the bursting charge located?

A. A cavity is bored out, the shell tempered to extreme hardness after it has been turned to size, and the base of the shell is fitted with a heavy steel plug hollowed out in continuation of the cavity. The bursting charge is located in this cavity in the shell. An armor-piercing shell for a 12-inch gun weighs 870 pounds; the bursting charge contained in such a shell consists of 22½ pounds of "Explosive D."

Q. How is the bursting charge exploded?

A. By means of a FUSE.

Q. Where is the fuse located?

A. In the case of armor-piercing and common shells, in the base of the projectile.

Q. What is the action of the fuse?

A. The action of the latest type of fuse is kept secret. As in the case of the primer, it is best to get the general principles on which a fuse operates firmly fixed in your mind rather than confuse yourself with the details of the various types of fuses. Consequently, in the accompanying plate, a typical fuse for an

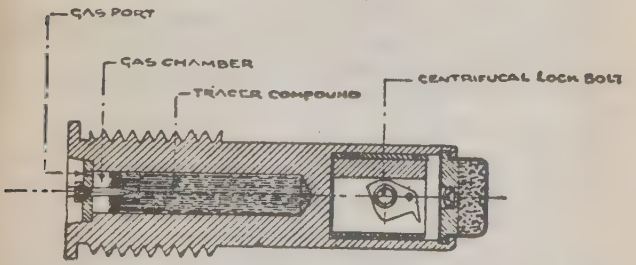


Plate 4.
Medium Caliber Tracer Fuse. Mark 1.

intermediate caliber projectile is illustrated. The stock, which is of brass, screws into the base of the projectile. When the projectile leaves the gun, the rotation about its length given it by the rifling of the gun, causes the centrifugal locking bolt shown in the plate to fly out, allowing the fuse to "arm," that is, allowing the point of the firing plunger to fly forward and take a position directly in rear of the fulminate of mercury cap that is shown. When the projectile strikes, the plunger flies forward, explodes the cap which, in turn, ignites the black powder in the forward end of the fuse and finally the bursting charge in the shell. The tracer is for the purpose of affording a means to follow the shell in flight when firing at night; the tracer compound is ignited by the gases from the firing charge in the gun and continues to burn during the flight of the projectile.

Q. What is SHRAPNEL?

A. Shrapnel is cylindrical in shape, with round hemispherical head; it is made of cast steel, has a small bursting charge and thin walls, the cavity of the shell being filled with a large number of small balls (from 200 to 400), about ½ inch in diameter, packed in rosin or sulphur.

Q. How is shrapnel exploded?

A. By a *time fuse* placed in the *nose* of the shell. This time fuse may be set so as to cause the explosion of the shrapnel while it is in the air, and, consequently, *before impact.* The Frankford Arsenal fuse is the only fuse now issued to the service.

Q. When should shrapnel be used?

A. To kill personnel; against exposed bodies of men ashore, or men on exposed decks. The shrapnel should be set to burst about 50 yards in front of the target.

Q. For what caliber gun is shrapnel now issued to the service?

A. 3-inch.

Q. Of what material is TARGET-PRACTICE SHELL?

A. Of cast steel or cast iron.

Q. Does target-practice shell contain a bursting charge and a fuse?

A. No; as it is used for target-practice only, there is no necessity for its bursting. Target-practice shell is brought up to weight of service shell by filling the cavity with sand, or some other material sufficiently heavy.

Q. How is the firing charge for guns put up?

A. For B. L. R.'s the powder is put up in silk powder bags. For 12-inch guns the charges are in four *sections,* or bags; for 8-inch, the charges are in two sections; and for 5-inch and 6-inch, in one section. The table after page 410 showing the "Elements of Naval Guns" gives the weight of the charge for each gun. Do not confuse a charge with a section; remember that the charge is composed of several sections for the larger caliber guns.

In the case of Rapid-Fire Guns, the firing charge is, of course, contained in the metallic cartridge case.

For purposes of stowage the bags of powder for the B. L. R.'s are enclosed in air-tight tanks. In the case of the 12-inch charges, two sections are in each tank.

Q. What is an IGNITION CHARGE?

A. At the base of each section of a firing charge there is secured an *ignition charge,* composed of black powder in the form of small prismatic grains, or of ordinary black rifle-

powder. The primer, when it fires, ignites the black powder of the ignition charge which explodes and fills the powder chamber of the gun with flames, and thus ignites all of the smokeless powder progressively.

Q. In loading a B. L. R. what is precaution about red ends of bags?

A. The end of the powder bag painted red marks the end where the ignition charge of black powder is located. The red ends must be aft in inserting the powder in the breech of the gun.

REMEMBER THAT

1. The FIRING-CHARGE is the charge *in the gun* which, on firing, drives the projectile from the gun. The firing charge is of smokeless powder.

2. The IGNITION CHARGE is in the base of the sections of the firing charge. The ignition charge is of black powder.

3. The BURSTING CHARGE is *in the shell*. It is of black powder, or of "Explosive D."

4. A B. L. R. always uses "separate ammunition"; and the powder comes in silk bags, *never* in metallic cartridge cases.

5. The ammunition for a RAPID-FIRE GUN *always* comes in metallic cartridge cases.

6. A PRIMER fires the ignition charge *in the gun*.

7. A FUSE fires the bursting charge *in the shell*.

Q. What is meant by the term BREECH MECHANISM?

A. The term "breech mechanism" means the system of breech closure of the gun, and the parts for opening and closing the same.

Q. What qualities has a good BREECH MECHANISM?

A. 1. It must completely stop the escape of all gas to the rear.

2. It must be strong enough to withstand pressure.

3. It must be simple, and not easily put out of order; parts quickly and easily replaced.

4. It must be easy to work.

5. It must be capable of rapid operation, so as to increase rapidity of fire.

Q. How does the breech mechanism check the escape of powder gases to the rear?

A. Rapid-fire guns have the powder charge in a cartridge case. When the gun is fired, the case expands against the sides of the powder chamber and keeps the gases from coming to the rear, there being no exit in that direction.

In the case of B. L. R.'s the powder charge is in silk bags; consequently, the De Bange gas check is used on the forward

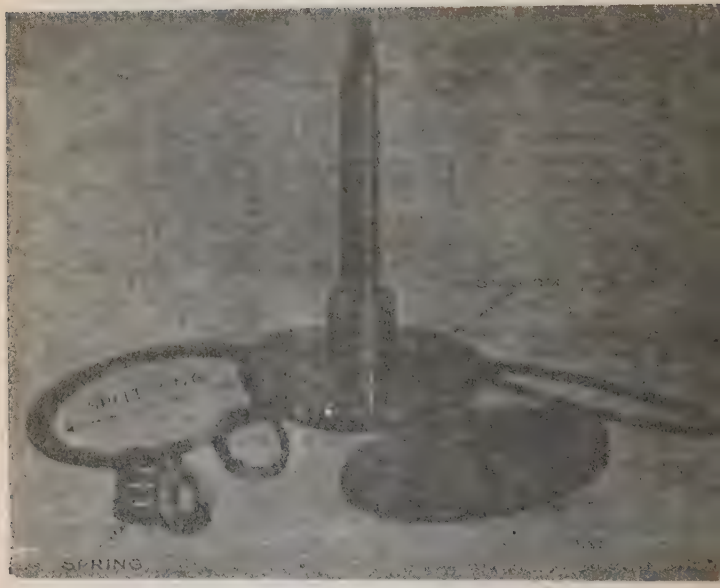


Plate 5.—Mushroom, Rings, Pad, Spring and Nut.

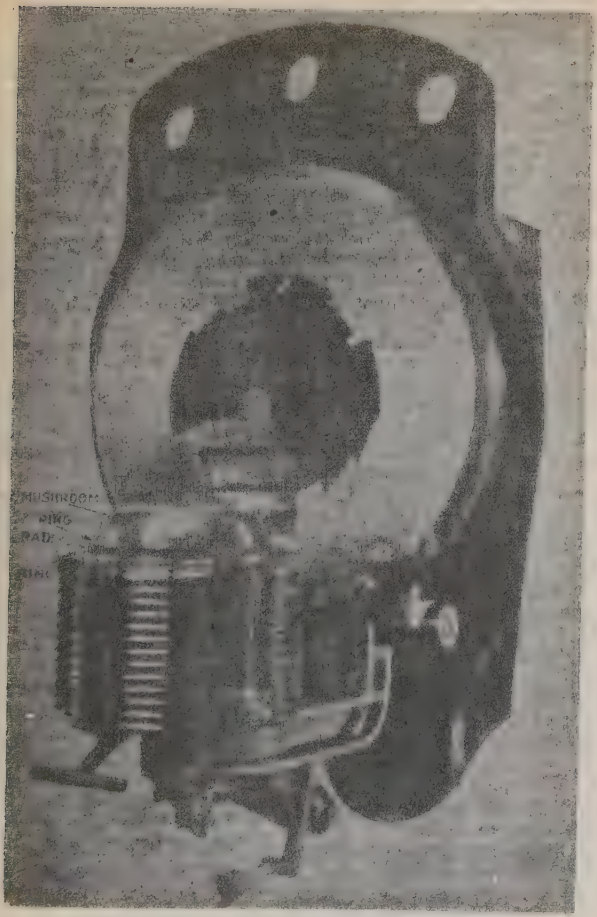


Plate 6.—Breech of 14-inch Gun, open.

part of the breech plugs · this keeps the gas from escaping around the plug.

Q. What is the action of the De Bange gas check?

A. It consists of a circular pad composed of 65 per cent asbestos, 35 per cent mutton tallow held between two steel split rings; the mushroom is forward, the breech plug aft, and the mushroom stem passes through both rings and pad. When the gun fires, the breech plug stays fast, the mushroom head is forced back, and this pressure on the pad squeezes it, pressing the edges out against the gas check seat in the chamber of the gun—the greater the pressure, the harder and more completely the edges of the pad are pressed out, thus stopping the gas. The steel mushroom, the split rings, the gas check pad and other details of the gas check are shown disassembled in plate 5, and the assembled breech mechanism of a 14-inch gun is shown in plate 6.

Q. How is the breech plug prevented from blowing out to the rear when the gun is fired?

A. It is held in place by a screw-thread on the plug which engages with a corresponding screw-thread in the screw box in the breech of the gun.

Q. How is the plug quickly disengaged from screw-threads when it is desired to open it?

A. Blanks are cut in the screw box and in the plug so that by turning the plug a part of a revolution, the screw-sections of plug occupy blanks in the screw box, allowing it to be drawn straight to the rear.

Q. How is the breech opened in a Rapid Fire gun?

A. By a system of levers; one motion of main lever turns the plug, then draws it out, and finally swings it clear of breech.

Q. Of what parts does a modern breech mechanism for a heavy gun consist?

A. Principally of the following parts:

1. The screw box; this is fitted in the breech of the gun.
2. The breech block.
3. The carrier.
4. The hinge plates.
5. The operating lever.

To get these parts firmly fixed in your mind, you must learn to locate them on the gun at which you are stationed.

Q. WHERE IS AMMUNITION STOWED?

A. In rooms specially designed for the purpose, called magazines and shell rooms.

1. Powder charges for B. L. R.'s are stowed in magazines.
2. Heavy fixed ammunition is stowed in separate magazines.

3. Shell in shell-rooms.

4. Ammunition for minor caliber R. F. G.'s and for small arms and machine guns in different ammunition rooms.

5. Wet guncotton—(used for torpedo and mine charges)—in magazines specially designed for it.

6. Dry guncotton—(used as primers for wet guncotton charges in torpedoes and mines)—in cases about the deck above the waterline.

Q. Where are these rooms located, and how are they fitted?

A. They are below the protective deck, usually in groups, forward, aft and amidships. An efficient means of flooding them is provided.

Q. How are powder tanks stowed in magazines?

A. The magazines are fitted with steel racks, separated by alleys, in which the powder tanks are stowed in a horizontal position. They are prevented from movement by light wooden battens.

Q. How are shells stowed in shell-rooms?

A. They are stowed in binns.

Q. Fixed ammunition?

A. Boxes containing the fixed ammunition are stowed in the binns.

Q. How are magazines and shell-rooms lighted?

A. By regular water-tight magazine lighting fixtures. They contain two incandescent lamps. They are located inside of compartments. In the older ships by light boxes opening outside of magazine.

Q. What are the principal SAFETY PRECAUTIONS in regard to the magazines and shell rooms?

A. 1. No naked light shall ever be taken into a magazine or other compartment containing explosives of any kind.

2. During firing no amunition other than that immediately required shall be permitted to remain outside the magazines.

3. The magazine flap doors of only such magazines as are being used to supply charges shall be open, the flaps in all cases being down except during the time of actual passage of the sections of the charge through the door.

4. There shall not be exposed (removed from the tanks) at one time in any one magazine more than one charge for each gun supplied by that magazine, and then only as necessary to supply the demand in the handling room; nor shall there be permitted at any time an accumulation of exposed sections for more than one charge for each ammunition hoist outside the magazines in the handling room.

5. No matches shall be taken into the magazines.

6. Always lead out fire hose in handling room, and connect up to plug. This should be done at drill as well as at actual firing.

Q. Where can you find out all the safety precautions in regard to turrets, guns and handling rooms?

A. The Navy Regulations require that copies of all safety orders pertaining to a turret, handling room or battery be posted in a place easily accessible to the men stationed at the particular type of gun. *It is your duty to consult this list, and make yourself thoroughly familiar with all safety orders that apply to your gun station.*

Q. What is a MISS-FIRE?

A. A failure of the charge to explode, due to any cause whatever, when an effort is made to fire the gun, either electrically or by percussion.

Q. What is a HANG-FIRE?

A. A hang-fire occurs when there is an appreciable interval between closing the firing key and the explosion of the charge. This interval may be of long or short duration.

Q. What are the principal causes of hang-fires?

A. 1. Displaced ignition charge, which keeps the flame from the primer from touching the black powder; or

2. The ignition charge may have been wet.

3. The powder bag may have been inserted wrong end to breech.

Q. Whenever a miss-fire occurs in any gun, what is the procedure in time of peace?

A. Whenever a gun pointer presses the firing key, or pulls the lock lanyard, and the gun fails to fire, a hang-fire shall be regarded as probable; and an *interval of at least 30 minutes shall be allowed to elapse* after the last effort to fire the gun, *before the breech is opened.* In time of war, the captain prescribes the length of this interval.

Q. What is a GAS EJECTOR?

A. After firing, there is an inflammable gas present in the chamber of a gun. Consequently, it is not permissible to expose the next charge at the breech of a gun until the chamber has been cleared of this gas. A gas ejector, fitted to the breech, clears the chamber after each shot by means of a blast of compressed air. When firing any powder bag gun, whether it is fitted with a gas ejector or not, a designated member of the gun's crew must look through the bore of the gun immediately after the opening of the breech and note when the bore is clear, announcing this condition by calling out, sharply and dis-

tinctly, "Bore clear!" After this has been reported, the loading may continue.

Q. What is done in case the gun is not fitted with a gas ejector?

A. It is sponged out after each shot. This is not necessary with guns using metallic cartridge cases.

II. GUNNERY.

Q. What is the final purpose of gunnery training?

A. The development of efficiency in battle.

Q. How is this training accomplished?

A. It begins with the intelligent selection of each member of a gun's crew; this accomplished, the object is to make each man expert in his individual duties. The gun crew is then perfected *as a team*, after which the object of training is to develop the ship's battery as a whole, and finally the collective fire of the batteries of more than one ship.

Q. How is excellence in gun-fire measured?

A. By rapidity of hitting the point of aim.

Q. What is meant by the GUN-POINTER GROUP?

A. The pointer, the trainer and the sight setter compose this group.

Q. What, in general, are the duties of each member of the gun-pointer group?

A. The pointer controls the pointing of the gun, and fires. He must remember that he occupies a most important position. A ship is built for the purpose of using her guns, and she may never be engaged in action more than a few minutes during her whole career; if, in these few minutes, a pointer, through over confidence, or neglect of any of the details of training, fails to fire accurately and as quickly as possible after the gun is loaded, he fails in his duty to his ship; he has occupied one of her important positions of offense without doing the enemy the greatest possible injury. The principal duty of the pointer is to aim always at the *designated point* of the target.

The duty of the trainer is to keep the gun trained continuously on the center of the target, or designated point of the enemy. He will, however, obey any instructions that the pointer may give him in regard to the point of aim.

The sight setter must keep the sight set exactly as he is ordered. *The more accurate the pointer, the more surely will he miss the point of aim if the sights are incorrectly set.* The sight setter is the second pointer for turret guns.

Q. What qualities are essential in members of the gun-pointer group?

A. In selecting gun pointers, division officers give weight to the man's ability to shoot straight, as indicated by his record with small arms, in connection with good eyesight, nerve, and a cool, non-excitable disposition.

Q. Why must a gun pointer have good nerve?

A. Some pointers, especially when firing for the first time, get so excited, and are so afraid the telescope will hurt them, that they will not aim acurately; or, if they do, they jump away from the eyepiece, or even away from the gun, thus failing to keep the gun pointed during the firing interval, losing valuable time, and accomplishing poor results. A pointer who cannot overcome this nervousness should not continue to fire the gun. Men whose nerve and physical training will withstand the exhaustive tests incident to battle are those to be desired. A man's rating, general knowledge or executive ability should not be allowed to have weight in his selection as a gun pointer.

Q. What principal methods are used to train gun pointers?

A. In general, pointers are trained by the use of mechanical targets which must represent the irregular motion of a ship in a seaway.

Every Navy guards its own particular methods of training as confidential. Details of the methods used in our Navy, the result of years of careful training, are given in "The Gunnery Instructions, U. S. Navy." Every division officer possesses a copy of this book, and uses the instructions therein given for the purpose of training his gun pointers and gun crews.

Q. What is meant by a "qualified pointer?"

A. A pointer who, at target practice, has proved able to come up to certain standards of accuracy and rapidity of fire prescribed by the Navy Department. A gun pointer's qualification shall last until the next opportunity for qualification, provided this occurs within two years.

Q. How does date of expiration of enlistment enter into the selection of a gun pointer?

A. When practicable, no man shall be selected for training as a gun pointer if the expiration of his enlistment will not permit him to serve as a gun pointer for at least a year after qualifying for that position. The longer a man has to serve, the greater his desirability as a pointer, other considerations being equal.

Q. Do QUALIFIED GUN POINTERS receive EXTRA PAY?

A. Yes; *in addition to the pay of their rating,* qualified gun pointers, who are regularly detailed as gun pointers at the type

of gun at which they have qualified, receive extra compensation as follows:

1. Heavy gun pointers.
   - 1st Class.....$10.00 per month.
   - 2d Class..... 6.00 per month.
2. Intermediate gun pointers.
   - 1st Class..... $8.00 per month.
   - 2d Class..... 4.00 per month.
3. Secondary gun pointers.
   - 1st Class..... $4.00 per month.
   - 2d Class..... 2.00 per month.

Q. Which target practice is for the qualification of gun pointers?

A. The elementary target practice, when the guns fire individually at short ranges.

Q. How is the gun's crew developed in rapidity of loading?

A. Rapidity of loading depends:

1. On the rapidity with which each member of the gun's crew performs his allotted duty.

2. On the members of the crew working together *like an athletic team*, each one performing his duty at exactly the proper time, and getting out of the way so as not to interfere with others in the crew.

3. On the precision with which each member of the crew goes through his portion of the drill. Accuracy and thoroughness in every movement, even though it requires slightly more time is, in the long run, very much the quickest, as it eliminates and avoids many little delays.

Rapidity of loading is developed by drills at the loading machine and at the actual gun.

Q. What, in general, is the composition of a turret handling room's crew?

A. There is usually a junior officer, or a chief petty officer, in charge. The crew is divided into "inside powdermen," who work inside the magazines, passing powder into the handling room; "outside powdermen," who handle the powder after it leaves the magazines and place it in the cars preparatory to hoisting; "inside shellmen," who handle the shell inside the shell rooms, lift it from the binns, and man the trolleys that lead into the handling room; "outside shellmen," who place the shell in the cars; a messenger and an annunciator-man.

The handling room crew must acquire the same degree of proficiency in the performance of their duties as the guns' crews. No turret can make a good score without hearty cooperation between the guns' crews and the handling room crew.

Q. Are PRIZES awarded to meritorious gun and handling room crews?

A. Yes; first, second, and third class gunnery prizes will be issued to meritorious crews, and the prizes awarded them will be made known as soon as possible after the completion of a form of practice. The present value of prizes is as follows:

First prize:	$20.00 per man.
Second prize:	10.00 per man.
Third prize:	5.00 per man.

Every member of a prize crew is entitled to a prize unless absent through some fault of his own.

Q. What is the BATTLE EFFICIENCY PENNANT?

A. After the end of the competition year, the battle efficiency pennant will be awarded to the vessels of the battleship, torpedo and submarine classes obtaining the highest final merit in both gunnery and engineering in their respective classes.

Q. What is the GUNNERY TROPHY?

A. The department offers trophies for excellence in naval gunnery to five classes of vessels. The trophies are awarded at the end of the competition year, July 1st. A trophy is awarded to the vessel in each of the following classes that attains the highest merit: Battleship, cruiser, gunboat, torpedo and submarine. When a trophy is received on board a winning vessel, there is an appropriate ceremony.

Q. What is "THE NAVY E?"

A. In order to distinguish the members of turret, gun, and torpedo crews that do exceptionally good work, the members of these crews will wear a white "E" on their blue uniforms, and blue "E" on their white uniforms, as specified in the uniform regulations. The Navy Department will designate the turret, gun and torpedo crews entitled to wear the "E," and such men will wear the "E" until the completion of the next elementary practice.

Winning turrets, guns, torpedo rooms, or torpedo tubes shall have one block letter E, not more than 18 inches high, painted on them in a conspicuous place.

Q. What are GUNNERY RECORDS and GUN POINTERS' CERTIFICATES?

A. Each man permanently detailed as a member of the gun-pointers' group will have a paper known as his "Gunnery Record," which will be kept in the Executive Officer's Office along with his service record. This gunnery record will show the entire experience of the man as a gun pointer, or sight

setter, from the beginning of his training. It will show when he is changed from one gun to another; when he shifts at his own gun from one position to another; when he fires at practice, and the score he makes; whether he qualifies as first or second pointer, and if so, at what class of gun he qualifies; and it will also show whether he fails to qualify at any practice.

When a pointer qualifies—that is, makes a certain number of hits per minute at the annual elementary practice—with this particular type of gun, he receives a 1st class or a 2d class gun-pointer's certificate in that class, and such certificate carries extra pay so long as the man holds his certificate and is stationed as pointer or trainer of a gun of the class at which he has qualified.

PART TWO

"Z"

SIGNALS

PART TWO.

"Z."

SIGNALS.

Q. What is the DOT AND DASH CODE?

A. The Dot and Dash Code comprises the Alphabet and numerals of the International Morse Code, together with certain additional symbols and secondary meanings, as follows:

ALPHABET.

A . —	J . — — —	S . . .
B — . . .	K — . —	T —
C — . — .	L . — . .	U . . —
D — . .	M — —	V . . . —
E .	N — .	W . — —
F . . — .	O — — —	X — . . —
G — — .	P . — — .	Y — . — —
H	Q — — . —	Z — — . .
I . .	R . — .	

NUMERALS.

1 . — — — —	5	8 — — — . .
2 . . — — —	6 —	9 — — — — .
3 . . . — —	7 — — . . .	0 — — — — —
4 . . . . —		

ADDITIONAL SYMBOLS AND SECONDARY MEANINGS.

Cornet — — — —
Letters (follow) — — — .
Signals (follow) . . — —
Interval or Designator . — . —
Negative (K) — . —
Preparatory (L) . — . .
Annulling (N) — .
Interrogatory (O) — — —
Affirmative (P) . — — .

Q. WHAT SIGNAL SYSTEMS ARE BASED ON THE DOT AND DASH CODE?

A. The following signal systems are based on the Dot and Dash Code:

1. Wigwag System.
2. Flashing or Occulting Light System.
3. Sound System.
4. The Ardois System.
5. Very System.

In signalling by all these systems, except the Very System and the Sound System with a whistle, each word is spelled out, unless the sender makes the signal "Signals (follow)," in which case the following signal will be found in one of the signal books. When the sender desires to return to spelled-out words, he makes the signal "Letters (follow)."

Q. What is the WIGWAG SYSTEM?

A. This system is directly applicable to signalling with hand flag, hand torch, or electric portable, swinging hand lantern and beam of searchlight.

The Dot and Dash Code is used with the following additional Conventional Signs:

CONVENTIONAL SIGNALS.

For use in all methods of signals except flag hoists and Very.

	Exceptions: Ardois and Semaphore.
End of word.....Interval.	
End of sentence.....Double interval.	
End of message.....Triple interval.	
Signal separating preamble from address; address from text; text from signature... — . . . —	Double interval (signature also preceded by "Sig. Interval").
Acknowledgement ..... . — . (R).	
Error	A *
Interrogatory ..... . — — . .	O *
Repeat after (word)....Interrogatory, A (word).	
Repeat last word.....Interrogatory twice.	
Repeat last message.....Interrogatory three times.	

* Upper light pulsated in Ardois; flags or arms chopped in semaphore.

Send faster .....QRQ.
Send slower.....QRS.
Cease sending .....QRT.
Wait a moment..... . — . . . None.
Execute .....IX, IX.
Move to your right.....MR.
Move to your left.....ML.
Move up .....MU.
Move down .....MD.
Finished (end of work). . . . — . — None.

SECONDARY MEANINGS.

Used only in flag hoists, Ardois, Semaphore, Very or in transmitting Navy Flag Code by other systems. (The use of Navy Flag Code is indicated by "Signals follow" . . — —).

Negative (K) — . — Interrogatory (O) — — —
Preparatory (L) . — . . Affirmative (P) . — — .
Annulling (N) — .

"Intervals" are expressed as follows in the various systems:

	Code Interval.	Double Interval.	Triple Interval.
Radio, flashing or occulting light	. — . —	. . . . .	. — . — .
	(The "interval" is not used between words in spelled-out messages.)		
Whistle	Very long blast	. . . . .	. — . — .
Bell	. . .	. . . . .	. . . . .
Wigwag	Front.	(twice).	(3 times).
Semaphore ...	Flags crossed or machine closed.	2 chop-chop signals.	3 chop-chop withdraw flag or close machine and indicator arm.
Ardois	. — . —	(twice).	(3 times).

In the Wigwag System there are three motions and one position.

"Position" is with the flag or other signal appliance held vertically, the signalman facing squarely toward the station with which it is desired to communicate.

In the *first motion* the flag is waved to the right of the sender, and will embrace an arc of 90 degrees starting from the vertical and returning to it; it will be made in a plane at right angles to the line connecting the two stations.

The *second motion* is a similar motion to the left of the sender.

To make the *third motion*, the flag is waved to the ground directly in front of the sender and instantly returned to "Position."

The first motion represents a dot (.), the second a dash (—), and the third "Interval."

Q. What is the FLASHING or OCCULTING LIGHT SYSTEM?

A. This system is based on the Dot and Dash Code as given above. A short flash represents a dot, a longer flash a dash, and a long steady display, the "Interval" of the Wigwag System.

Q. What is the SOUND SYSTEM?

A. This system, like the preceding, is based on the Dot and Dash Code, and includes the Conventional Signs of the Wigwag System, except those for "Move a little to the right," etc. "Acknowledgment" is made by sounding ship's own call letter immediately after .—. .—. "Interval." The calling ship then sounds .—. .—. "Interval," and own call letter, and proceeds with the message.

In this system a toot or very short blast represents a dot, a longer blast a dash, and a much longer blast "Interval."

In using a bell or similar appliance, one stroke represents a dot, two strokes a dash, and three strokes "Interval."

Q. What is the ARDOIS SYSTEM?

A. In this system the Dot and Dash Code, except the numerals, is transmitted by the Ardois System—a four-lamp system of incandescent lamps in a vertical hoist, showing either red or white lights, singly or in combination, to the number of four lamps, by which any character is made by a single display. Conventional signals of five or six elements cannot be made by Ardois, and must be spelled out. Exceptions:

Error "A" (upper light pulsated).

Interrogatory "O" (upper light pulsated).

A red light represents a dot and a white light a dash.

The following have secondary meanings when the upper light is pulsated:

A (RW) Error.
I (RR) Execute.
K (WRW) Negative.
L (RWRR) Preparatory.
N (WR) Annulling.
O (WWW) Interrogatory.
P (RWWR) Affirmative.
Q (WWRW) One.
R (RWR) Two.
S (RRR) Three.
T (W) Four.
U (RRW) Five.
V (RRRW) Six.
W (RWW) Seven.
X (WRRW) Eight.
Y (WRWW) Nine.
Z (WWRR) Zero.
Interval (RWRW) Designator.

NOTE.—"R," used to signify "acknowledge," is a conventional signal, not a secondary meaning, and is not pulsated.

The following conventional signs are used:

End of word: RWRW.
End of sentence: RWRW, RWRW.
End of message: RWRW, RWRW, RWRW.

Acknowledgment (a) In signals corresponding to the signals of the flag code, repeat each display.

(b) In spelled-out messages receiver makes RWR at end of message to indicate that it is understood.

Q. What is the VERY SYSTEM?

A. This system is based on the Dot and Dash Code as given above. The signals are made at night by firing red and green stars in the air by means of a pistol. *A red star represents a dot and a green star a dash.* However, only signals that may be sent by the Navy Flag Code may be sent by this system, and the Conventional Signals are limited to the following:

General call: Rocket and green star.
Answering (acknowledgment): Red star (.).
Repeat: Green star (—).
Interval (separating the alphabet letters of a signal): { Red star. / Green star.
Double interval (separating the code groups): Two intervals.
Triple interval (end of message): Three intervals.
Execute: Rocket and red star.
Distress or danger: Red star several times.
Numerals follow (or end) Rocket: { Red star / Green star } Rocket.

The preparatory, affirmative, negative, interrogatory, and annulling are as in flag signalling, L, P, K, O, and N.

Q. What is the SEMAPHORE CODE?

A. The Two-Arm Semaphore System is shown in the following table. All semaphore signals are spelled-out messages unless preceded by "signals (follow)," in which case the signal will be found in one of the signal books.

CONVENTIONAL SIGNALS.

With the machine, "interval" is made by closing the arms, but allowing the indicator to show; "double interval" is two successive chop-chop signals; "triple interval" is three successive chop-chop signals, followed by the closing of both arms and indicator. The chop-chop signal is made by placing both arms at the right horizontal, and then moving them up and

down in a cutting motion, the indicator being displayed. With hand flags, "interval" is as shown in table; "double interval" is two successive chop-chop signals; "triple interval" is three successive chop-chop signals, and withdrawing the flags from view.

Conventional signals are used, with the following exceptions:

Error, "A" (agitated).

Interrogatory, "O" (agitated).

Those of five or six elements cannot be made and must be spelled out.

There are the following additional conventional signals:

Repeat after (word): Interrogatory [O] (word).

Repeat last word: Interrogatory twice.

Repeat last message: Interrogatory three times.

Signature follows: Sig. Interval.

Q. How do you send a message by semaphore?

A. Face the station or ship squarely and make its call letter. If there is no immediate reply, wave the flags over the head, or wave the arms toward the vertical in order to attract attention, making the call letter at frequent intervals. When the station called answers, it does so by making its own call letter. With the machine, this call letter is left with the display fixed until the message has been received and understood; this is signified by closing the machine. When the sender makes "end of message" by hand flags, the receiver, if the message is understood, extends the arms horizontally and waves the flags until the sender does the same, whereupon both sender and receiver leave their stations.

Q. Where is the FLAG CODE of signals to be found?

A. The Flag Code is contained in the General Signal Book; it is most frequently used for flag signals by day.

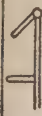
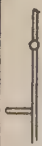
Q. How is a Flag Code Signal made by Flag Hoist?

A. Select from the General Signal Book the letters representing the signal it is desired to make. Take alphabet flags representing the letters and bend them on the signal halliards in the order in which they come. The flags used consist of twenty-six alphabet flags—the same as those of the International Code—a numeral flag, three repeaters, and a number of special flags and pennants.

Q. Describe the flags of the international code, the repeaters, the cornet, the numeral flag.

A. See plates.

The Semaphore Alphabet.

Characters.	Two-arm semaphore.			Characters.	Two-arm semaphore.		
	Machine.	Hand flags.	Secondary meanings.		Machine.	Hand flags.	Secondary meanings.
A			Error.	G			
B				H			
C				I			IX Execute
D				J			
E				K			Negative.
F				L			Preparatory.

The Semaphore Alphabet—Continued.

Characters.	Two-arm semaphore.			Characters.	Two-arm semaphore.		
	Machine.	Hand flags.	Secondary meanings.		Machine.	Hand flags.	Secondary meanings.
M				S			
N			Annulling.	T			
O			Interrogatory.	U			
P			Affirmative.	V			
Q				W			
R			Acknowledge.	X			

The Semaphore Alphabet—Continued.

Characters.	Two-arm semaphore.			Characters.	Two-arm semaphore.		
	Machine.	Hand flags.	Secondary meanings.		Machine.	Hand flags.	Secondary meanings.
Y				Letters (follow).			
Z				Signals (follow).			
Cornet.				Interval.			Designator.

Q. What flags are used as numerals?

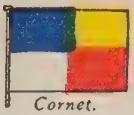
A. The last ten flags of the alphabet, in conjunction with the "Numeral Flag."

Q. What are the repeaters?

A. The repeaters repeat alphabet flags in numeral and vocabulary hoists. The first repeater repeats the first; second, the second; third, the third.

Q. What are the "Indicator Flags?"

A. See plates. They are special flags used in conjunction with the "call flags" to call Squadrons, Divisions, Torpedo Flotillas, Torpedo Divisions, Submarine Flotillas and Submarine Divisions.



Cornet.

— — — —

Numerals.

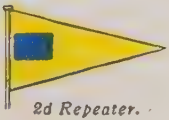
Ardois—Upper light pulsated.

Very—Rocket { • — } *Rocket.*

None in other codes.

Repeaters.

1st Repeater.



2d Repeater.

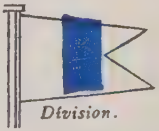
3d Repeater.

Indicators.

Flashed in Ardois. Preceded by call prefix in Sound, and Flash, and by rocket in Very.

Squadron.

— — — —



Division.

• • — —

Torpedo Flotilla.

— — — •

Submarine Flotilla.

• — • —

Q. What are "Call Flags?"

A. Twenty-three flags representing the letters of the alphabet, except E, I, and T. They are designed in a manner similar to the alphabet flags, with "flys" of distinctive colors added to prevent confusion with alphabet flags. They are used in all calls by flags except in a case of one vessel calling another of the same division. If you have learned the alphabet flags of the International Code, you will, of course, have no trouble in recognizing the call flags.

Q. What is the "Cornet?"

A. See plate. The Cornet is used:

1. Hoisted at the fore, or at the highest gaff or signal yard —if the foremast head cannot be used—is a peremptory order for everybody to return on board at once, *regardless of length of leave.*

2. It means that a ship is under sailing orders and about to get underway.

3. Hoisted half-yard-arm high it is a call for the whole force to receive a wigwag or a semaphore message.

Q. What is the "Answering Pennant?"

A. See plate. It is to be hoisted where it can best be seen in answering to a signal and kept there until the signal is hauled down. The details of the use of the Answering Pennant will be given in Part III. There are also a number of special flags and pennants which will be described in Part III. The answering pennant is also used as a divisional mark in reporting mixed numbers.

Q. What is the meaning of the names given under the alphabet flags in the plate?

A. In order to avoid confusing the sounds of the various letters in reporting signals, each flag is given a distinctive name. It would be a simple matter, for example, to confuse the sound of "T" and "D," but, by using the names "Tare" and "Dog," all possibility of confusion is avoided. The names given will always be used in reporting or calling out signals on the bridge.

Q. What are the duties of a SIGNALMAN?

A. He stands watch on the bridge and sends and receives signals. He is an assistant to the quartermaster and keeps lookout at all times. He carries signals to the officer of the deck, when required. When needed for signalling—either in sending or receiving—he reports on the signal bridge at once, whether on watch or not. His constant aim should be to prove himself alert, quick, and always accurate; he should answer a

signal as soon as it is understood, report the signal and ser reply as soon as possible. He must, of course, be perfect familiar with all systems of signalling.

Q. Do signalmen receive extra pay?

A. Yes; enlisted men regularly detailed as signalmen receiv the following extra compensation in addition to the monthl pay of their rating:

Signalmen, first class	$3.00
Signalmen, second class	2.00
Signalmen, third class	1.00

Alphabetical Code Flags and Pennants

(Same as International Code)

ABLE

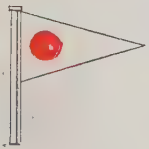
EASY

ITEM

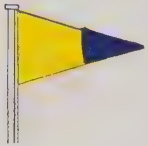
BOY

FOX

JIG

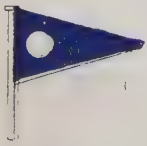


CAST



GEORGE

KING



DOG

HAVE

LOVE

MIKE
(2)
RUSH
(7)
WATCH
NAN
(3)
SAIL
(8)
X-RAY
OBOE
(4)
TARE
(9)
YOKE
PUP
(5)
UNIT
(0)
ZED
(1)
QUACK
(6)
VICE
Answering and Divisional.

PART THREE

"S–1"

BOATS

Note: Also see Part II, "O"

PART THREE.

"S—1."

BOATS.

Q. Give type, length and stowage of all the boats of your ship.

Q. Equip a pulling-boat, providing the gear that must be carried by such a boat at all times.

A. This is a simple matter if you have the list given in "The Deck and Boat Book" to refer to. But if this book is not at hand, use your common sense; think of the gear you would want in a pulling-boat. Your list will be somewhat as follows: Set of oars, anchor with chain or line; spars, sails and rigging; painter and stern fast, rudder and tiller; set of rowlocks; 3 boat hooks; set of stretchers; set of fenders; boat box and key; bucket for bailing; compass; plug; deck lantern for night work. In addition to the above, it is easy to remember that you must always have spare oars and rowlocks for one thwart, that you must fit oars with trailing lines if swivel rowlocks are used and that the rowlocks must be fitted with short lanyards to keep them from being lost. Breakers containing sufficient water to give everyone in the crew at least half a gallon must be provided. In the tropics you would need a boat awning and stanchions. In foreign ports, every boat away from the ship is required to display the boat ensign. This, together with a red wigwag flag, an answering pennant, a boat distinguishing flag, and their staffs are contained in a canvas bag. Cleaning gear for the boats must be provided, and stowed in a tin box with cover for protection. All this gear will be kept in the boat at all times, except the compass, which is kept in the navigator's storeroom when the boat is not in the water. A tarpaulin and two grapnels fitted with chain or rope are supplied for each boat for use if needed; and there is also a small medical emergency box kept in the sick bay, or other designated place on board ship. The latter is placed in the boat only when required for drill or service. In the medical box there are complete instructions for giving medicines.

Q. How does the equipment for STEAMERS and MOTOR BOATS differ from the above?

A. Only two oars, with rowlocks, are carried. No sails are carried; no plug and no stretchers. The following gear is provided, in addition to the gear for a pulling-boat; cushions and cushion covers; necessary tools for service of engine; two circular life buoys secured where readily detachable; life jackets in stern sheets; running lights, fog horn and bell, whistle as required by "Rules of the Road," bucket of sand and chemical fire extinguisher (for gasoline boats). Two hand grapnels, fitted with chain or rope; fuel, lubricating oil and water.

Q. Equip a MOTOR SAILING LAUNCH, MOTOR WHALEBOAT, or a MOTOR DORY.

A. First provide all the gear carried by a pulling-boat of the same type, then the following additional gear: running lights, fog horn, whistle, as required by "Rules of the Road"; fog bell (if 26 feet or longer); bucket of sand and chemical fire extinguisher for putting out gasoline fires; fuel; tools for service of engine.

Q. What is in a BOAT BOX?

A. Ax, hatchet, saw, hammer, screw driver, chisel, screws, nails; sufficient tools to make any emergency repairs. Lead and line, tallow, candles, signal lantern, matches, fishing lines, hooks and sinkers; lamp wick, spun yarn, sail twine, palm and sail needles; and a copy of "The Deck and Boat Book," which contains complete instructions in regard to boat equipment, drills, signals and all other information in regard to boats.

Q. When are cooking utensils supplied to a boat?

A. Only when specially required. The amount of provisions and water carried under various circumstances depends on the length and nature of the service.

Q. What are the general instructions in regard to LIFEBOATS?

A. *At sea* every ship at all times keeps on each side, ready for lowering, a boat which is best adapted as a lifeboat.

In port one or both lifeboats must be kept ready for immediate use from sunset until colors the next morning. Hence, when there is no suitable boat in the water ready for immediate us as a lifeboat, at least one boat suitable for this purpose must be kept ready for instant lowering

Q. What boats are usually used as lifeboats on a battleship?

A. Whaleboats, ordinarily at quarter davits.

Q. When is the lifeboat crew of the watch mustered?

A. At the beginning of every watch at sea, and as often thereafter as may be necessary to make sure that the crew

is on deck and in the vicinity of the boat. The lifeboat crew of the watch falls in abreast the lee lifeboat, where it is mustered by the coxswain of the lifeboat crew. After this muster, the coxswain makes sure by personal inspection that *both* lifeboats are ready for lowering, which fact he reports to the officer of the deck.

Q. When is a lifeboat secured for sea, that is, ready for lowering?

A. Boat at davits, griped in, falls clear, detaching apparatus ready for detaching at word, steering oar shipped in crutch, oars fitted with trailing lines and ready for getting out quickly, rowlocks shipped and fitted with lanyards, plug in, sea painter half-hitched around forward thwart, life lines bent to span, life jackets in boat, lantern filled and trimmed—*and at night lighted*—and all other articles of the boat equipment in the boat and ready for use, with two days' water and provisions for the crew. *When the coxswain reports a lifeboat ready for lowering,* it is understood that the boat is in this condition and that the crew of the watch have been mustered, each man abreast his own thwart (or station) of the lee boat, and that each man understands his duties at "Man Overboard."

Q. In lowering a lifeboat, when is the boat detached?

A. The officer or coxswain in charge of the lifeboat will give the command for detaching. A boat is usually detached when it is a few inches from the water.

Q. How should a lifeboat be griped in?

A. Securely against its strongback, with chafing pad between boat and strongback. Secure gripes by toggle or pelican hook so they can be let go instantly. If gripes stretch and become slack, set them up taut.

Q. What care should be taken in regard to boat falls?

A. At night, coil them down on the deck, clear for running. During the day, they may be triced up to davit with becket and toggle.

Q. What is the SEA PAINTER?

A. It is a line led from a point well forward on the ship, outboard of everything, and secured to the inboard side of the forward thwart of the lifeboat in such manner that it can be readily cast off. The strain on the sea painter helps sheer the bow out when the boat strikes the water and thus aids her in getting away from the ship's side.

Q. What is the use of the knotted lifelines?

A. The knotted lifelines, one for each member of the crew, hang from the span for the use of the crew in case of accident in lowering or hoisting.

Q. What about the LIFE JACKETS?

A. They should be placed, one under each thwart and one under the stern sheets, and each man in the lifeboat shall put one on before the boat is lowered. This is necessary because of the danger of the boat's swamping alongside in rough weather.

Q. Where is the lantern stowed when not in use?

A. If the lantern is not provided with a shutter, it shall be fitted with a canvas screen; when lighted and not in use, it shall be put in the boat bucket.

Q. How do you know when you are detailed for the lifeboat crew?

A. Lifeboat crews for each watch are designated on the ship's station bill. The detail includes men who are permanently stationed for unhooking the falls, tending the sea painter and performing other duties in connection with lowering, as well as men stationed for observing the man in the water and for signalling. *None of these men so detailed are to leave the weather deck while their section is on watch.* At night they will remain near their stations. When a lifeboat crew is mustered, the men muster in line abreast the lee boat in the order of their thwarts, facing inboard. Men stationed to lower will be abreast their respective davits, and shall personally see that the falls are clear.

Q. If you are a member of the lifeboat crew, what do you do at the call "Man overboard?"

A. Go to your station on the *run*, remembering that the lee lifeboat should be manned, unless the officer of the deck gives orders to the contrary. Take your seat on the thwart; put on a life jacket; get your oar ready; then, if you have nothing else to do, take hold of a lifeline.

Outboard bowman tends lower block of forward fall; sees lanyard of tumbler hook clear; unhook at the command. If hook does not trip itself, keep lower block clear of boat.

Outboard stroke, same duties aft.

Inboard bowman tends sea painter, sees it clear, and lets go at the order.

Inboard stroke breasts boat off ship's side, assisted by next oarsman forward, if necessary.

Waist oarsmen, outboard, clear gripes, keep their seats, get oars out as soon as possible after boat takes the water.

Waist oarsmen, inboard, tend steadying lines.

Q. What precautions are taken in LOWERING THE BOAT?

A. A sea painter from well forward is brought into the boat through the inboard bow rowlock and a turn is taken around

the inboard end of the forward thwart. To keep the boat from swinging, frapping lines may be passed around the falls, the ends leading inboard, to hold the boat close in to the side as it is lowered. The great danger in lowering, and at the time the boat is water-borne, is that she may be dashed against the side of the ship. A sea painter brought in on the inner bow of the boat, as already described, helps to sheer her off as she strikes the water. The coxswain sheers the bow out by throwing the *stern in* with the steering oar as the boat strikes the water. In bad weather, oil should be used both ahead and astern of the boat. The falls must always be lowered together, and in rough weather, smart lowering will be required. Men in the waist thwarts hold the boat off if the ship is rolling. The second bowman tends sea painter, which is hauled taut and brought in through the inboard bow rowlock before lowering. He takes a turn with the painter around the thwart, holding the end in his hand; it should never be made fast. When the boat is a short distance from the water, the coxswain lets go the detaching apparatus. The coxswain then gives the boat a sheer out. This is done by throwing *the stern in*, to get the *bow out*. The strain on the sea painter helps sheer the bow out. When clear of the ship's side, cast off the sea painter, on orders from the boat officer or coxswain.

Q. What precautions are taken in HOISTING THE BOAT?

A. In case of a heavy sea, use oil freely. Boat the oars before getting alongside, as soon as possible after receiving the sea painter. Bowman seizes sea painter and takes a turn around the forward thwart. Frapping lines may be used as in lowering. In the same way, thwartmen will, by the use of boat hooks, keep the boat from swinging against the ship's side. The boat should never have to wait for preparations on deck. These preparations consist in leading the falls along the deck so that men will have a clear hauling space. All being ready on deck, stand by, wait for a smooth time, hook forward, then aft, haul taut, hoist away. Men should run away with the falls as the ship rolls toward the boat which should be run up quickly but steadily. If the winch is used, the falls should be taken around the barrel, which should be turning at the desired speed before the order "Haul taut" is given. Boats fitted with automatic releasing hooks should have their falls rove off in one, single leaders at the davit heads, and the blocks must be large enough to let the falls render easily.

Q. What are the SIGNALS FOR LIFEBOATS?

A. Signalmen, previously detailed, man the rigging and keep their eyes on the man in the water. Signals hoisted at a

yardarm tell the direction the boat must pull. Numeral 1 (numeral flag over "Quack") directs the boat to pull to the right of a line from the ship to the boat; numeral 2, to pull to the left of a line from the ship to the boat; numeral 3, to pull straight away from the ship, and numeral 0, to pull straight toward the ship. These day signals shall be obeyed without answering.

At night these same numbers, made by Ardois, shall be used: or, in the absence of a signal set, Very's night signals shall be used as follows: Red star instead of Number 1, green star instead of Number 2, a bracket (red and green stars) instead of Number 3, and a rocket instead of Number 0. At night the boat will acknowledge signals by flashing the lantern.

COMMANDS FOR BOATS UNDER OARS.

Q. What commands are always used for single-banked boats?

A. "Stand by the oars."
"Shove off."
"Out oars."
"Give way together."
"In bows; or Trail bow."
"Oars" (followed by "Way enough" or "Way enough." without the command "Oars").

Q. What is done at each of these commands?

A. See Part II, "O."

Q. What condition should a single-banked boat be in before she is ready to receive passengers?

A. The oars should be in their places, in rowlocks, blades in the water, oars trailing fore-and-aft.

Q. On what occasions are the commands given above used?

A. 1. With all boats having awnings spread.
2. Laden boats.
3. Working boats.
4. Boats carrying visiting parties.
5. All pulling boats at sea.
6. In rough weather in port, for all boats.
7. With all pulling boats after sunset.
8. With all single-banked boats.

Q. What are the commands used on occasions not covered by the above?

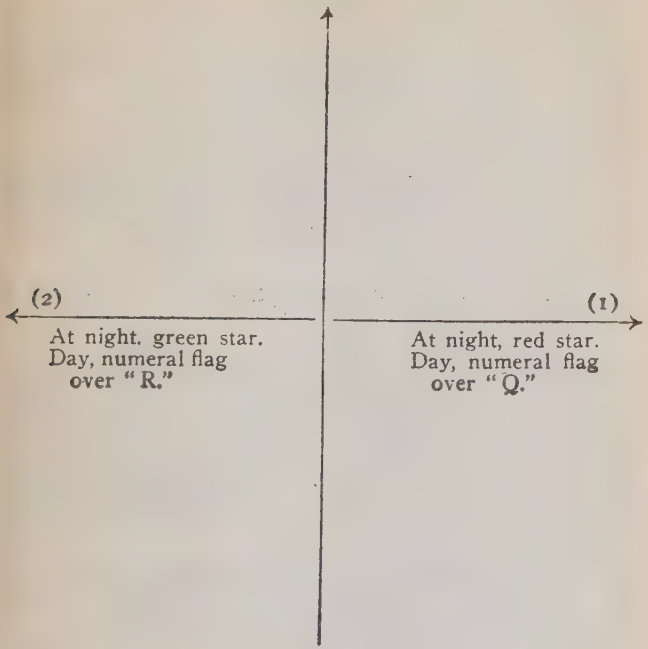
A. In all other cases than those mentioned above, the following commands shall be used for double-banked boats having rowlocks that permit of "letting fall," in port or in smooth water:

(3)

At night { red / green } stars.

Day, numeral flag over "S."

BOAT.



SHIP.

(0)

At night, a rocket.

Day, numeral flag over "Z."

"Stand by the oars."

"Up oars."

These commands should be given before the boat is reported ready:

"Shove off."

"Let fall."

"Give way together."

"In bows."

"Stand by to toss": "Toss," or "Oars" (followed by "Way enough," or "Way enough," without the command "Oars").

Q. What is done at each of these commands?

A. See Part II, "O."

Q. What other commands may be given in pulling boats?

A. "Trail." "Hold water." "Stern all." "Back starboard (or port)." "Back starboard, give way port," or "Back port, give way starboard." "Boat the oars." "Point the oars."

Q. What is done at each of these commands?

A. See Part II, "O."

Q. What is the most dangerous duty that a ship's boat is called upon to perform?

A. LANDING THROUGH A SURF.

Q. What is the safest method of landing through a surf?

A. The skill necessary to make a successful landing through surf can be obtained only by practical experience gained first as an oarsman and later as a coxswain. An inexperienced crew should never attempt to land through a surf unless it is absolutely necessary. The safest method is to *back in*, keeping the bow to the sea. Every time a sea approaches, pull to meet it, with a good headway. Then back in as fast as possible after it passes.

Q. Why is this the safest method?

A. Because the great danger in landing through a surf is that of "broaching to." The wave lifts the stern, forces it to one side, until the boat gets broadside on and capsizes.

Q. What are the rules for managing an open boat in running to seaward through a surf?

A. If sufficient command can be kept over the boat by the skill of the crew, avoid the sea if possible, so as not to meet it at the moment of its breaking or curling over.

Against a head gale and a heavy surf, get all possible speed on a boat on the approach of every sea which cannot be avoided.

Q. How would you RUN A LINE with a small boat?

A. Coil most of the line in the stern sheets, but take end enough in the bow to make fast when you reach the landing.

Pull away and let the ship pay out more line until your are sure of having enough in the boat to reach, then pay out from the boat. Always have plenty of good seizing stuff for making all secure, and if you are to stand by the line, have an ax ready for cutting it in case you are ordered to do so. If laying out with the tide, take less line in the boat than otherwise. If against the tide, take all the line in the boat, pull up and make fast, then bring end back to the ship. With a long line to be laid out in a strong current, it will usually be necessary to have several boats, one to run away with the end, the others to underrun the line at intervals, floating it and pulling upstream with the bight. If the line is to be secured to a bollard, put a bowline in the end before starting, and throw this over the bollard. Bend on a heaving line and let the bow oarsman throw this, if hands are standing by to receive it, or jump ashore with it himself, if necessary.

Q. TOWING an unladen boat in a smooth sea, give precautions in towing boat and tow.

A. Towing boat passes clear of oars of the tow, places herself in line ahead, receives painter from tow, secures it to ringbolt in stern-post, and starts ahead as soon as she has hold of the painter.

Bowman in tow does not give towing boat his painter until she is about ahead. He then takes in slack towline, *keeping a strain on it*, and *gradually* pays it out, thus getting way on the tow gradually, and avoiding too sudden a strain on towline, or on stem of boat.

Q. What precautions are taken in case the tow is heavily laden, or the sea rough?

A. Toggle the painter to a stretcher between the two after thwarts of the towing boat, and to the forward thwart of the tow. To steer, bear towline over on the quarter toward which you want to turn, for the rudder will be of little use.

Q. Give precautions when CARRYING STORES.

A. Be careful with the oars, as they may easily be injured by letting stores fall on them. Keep all casks "bung up," and leave a space, or "well," under the after thwart for bailing the boat out. Have tarpaulins for covering bread, or anything that will be injured by salt water or rain. While loading, bear in mind any rough water that you may encounter. Don't overload a boat; you may capsize, and be responsible for loss of life. When carrying treasure, always attach a buoy, with a drift of line at least equal to the greatest depth of water on the way back to the ship.

QUESTIONS ON HANDLING BOATS UNDER OARS.

Q. What precautions do you take in going into a crowded or difficult landing?

A. Pull easily; keep boat under control with oars as long as possible, laying on oars, if necessary, and boating them only at the last moment.

Q. In going through a narrow entrance?

A. Get good way on the boat, then trail or toss the oars.

Q. In pulling across a current?

A. Try to get a range on two objects in line and steer by these to keep from being set down by the current.

Q. Which holds her way longer, a loaded boat or a light one?

A. A loaded boat.

Q. What is the best thing to do when you have a long pull against the tide?

A. Run inshore where the tide is slacker than it is in midstream, and where there is sometimes an eddy.

Q. What about carrying a lantern?

A. Always see that there is a lantern, filled and trimmed, in the boat.

Q. What precautions in regard to carrying a compass?

A. A boat should never leave the ship without a compass. The weather is liable to thicken at any time, and consequently a boat without a compass would have difficulty in reaching a landing or returning to the ship. A coxswain should always know the compass course between the ship and the landing. If you are away from the ship and it begins to thicken, note the compass course to the ship before she is shut in.

Q. What precautions for a boat leaving the ship at sea?

A. Every boat should carry a compass, water and provisions. With the exception of lifeboats, all boats sent away from the ship at sea will carry rifles and ammunition.

Q. What precautions should be taken in going alongside?

A. Never go alongside a vessel that has sternboard, or which is backing her engines. In going alongside in a seaway or when a strong tide is running, warn the bowman to look out for the boat line which will be hove from the ship.

Q. What do you do if you are caught in a gale in an open boat?

A. Rig a sea anchor by lashing the spars and sails together, sails loosed. Fit a span to this, and ride by the painter. If there is oil in the boat, secure a bag of it to the sea anchor.

BOATS UNDER SAIL.

Q. Why is the use of the lee oars dangerous when under sail?

A. A slight gust of wind lowers the gunwale sufficiently to prevent the oars from being lifted from the water. In this way it may be easy to "catch a crab," and the headway of the boat will cause the oars to fly violently fore-and-aft. *The use of an oar at any time with a boat under sail is lubberly and should consequently be discouraged.*

Q. What about climbing the mast of a boat?

A. Never let anyone climb the mast of a boat. If halliards or brails are unrove, unstep the mast.

Q. What precautions in coming alongside under sail?

A. It requires care, judgment and experience. Never attempt to go alongisde under sail if a boat or other obstruction that the mast could touch overhangs the gangway. Don't go alongside under sail in rough weather when the rolling motion of the boat would cause the masts to strike the gangway platform. Under these circumstances unstep the masts and bring the boat alongside under oars.

Q. What is the best method of coming alongside under sail when the ship is riding to a windward tide?

A. Approach the gangway from abaft the beam. Tend all gear, and shorten sail when boat has sufficient way to reach gangway. Bow and stroke oarsmen tend boat hooks, and other men perform their duties in shortening sail.

Q. If the ship is riding to the wind?

A. Approach gangway from about abeam. Tend all gear. Bow and stroke oarsmen stand by with boat hooks. When there is enough way to make the gangway, command: "In jib and foresail." Let go jib tack and sheet; smother jib into foremast. Lower foresail or brail it up. At the same time put tiller hard down; haul main boom amidships or a bit on weather quarter. This throws the boat's head into the wind; hauling the main boom to windward deadens her headway, when desirable. When alongside, command "In mainsail"; stow sails and unstep, if desirable. This is the surest and safest method; but with skill in handling, all sails may be taken in together, the tiller put hard down, and the boat rounded up to gangway. This requires more skill and judgment. It should not ordinarily be attempted.

Q. If there is any current, how make allowances for it?

A. Head for a point further forward or aft as the case may be.

Q. What is meant by tacking, wearing, heaving to, gybing, "by the wind," trim, weather tiller, lee tiller?

A. See Part II, "O."

Q. What effect does the position of weights have in sailing a boat?

A. See Part II, "O."

For convenience of reference, the following tables of commands and duties for boats under sail are taken from "The Deck and Boat Book, U. S. Navy:"

SLIDING GUNTER RIG.

(1) Following are the commands which apply to the sliding gunter rig, and the drill shall be adapted and applied to other rigs as well as may be practicable.

COMMANDS.	DUTIES.
(2) *Being under oars, to make sail.*	
(*a*) Way enough	Oars are boated.
(*b*) Stand by to step....	All hands cast off spar covers.
	Starboard thwartmen launch mainmast forward until heel of mast is even with step; raise masthead.
	Similarly port thwartmen launch foremast to position and raise masthead.
	All the crew remain seated whenever their duties will permit.
(*c*) Step the masts.....	Stroke oars guide heel of main into step.
	Bow oars guide heel of fore into step.
	Starboard thwartmen stand on bottom boards and raise mainmast.
	Port thwartmen stand on bottom boards and raise foremast.
	Bow and stroke oarsmen get masts on proper slue and, when nearly vertical, guide them into step.
	Bow and stroke oarsmen and second bow and second stroke cast off shrouds and set them up. If jib boom is used, it is stepped by bowmen after mast is stepped. In this case the second bowmen set up the fore shrouds.

COMMANDS.	DUTIES.
(*d*) Loose sail	Stroke oarsmen cast off sheet from main and take place in stern sheets with mainsheet in hand. Second stroke attends main brails. The other second stroke mans main-topmast halliards. Starboard stroke report when all is ready aft. Second bowman casts adrift fore-sheet, passes it aft, and attends forebrails. The other second bow-man mans foretopmast halliards. One bowman casts adrift jib halliards, hauls head of jib down to the deck and mans jib halliards. The other bowman sets up jib tack and passes sheets aft on each side. Starboard bowman reports when all is ready forward.
(*e*) With starboard (or port) sheet; make sail.	Topmasts are hoisted chock up, brails eased down and well overhauled, and jib hoisted. Thwartmen convenient to sheets, haul them aft on designated side and at-tend them. Bowmen keep bright lookout ahead; keep coxswain fully informed of the proximity of obstructions or approaching vessels.
(3) *To tack.*	
(*a*) Ready about	Given as a warning for the crew to prepare for the evolution. The coxswain gives the boat a good full, waits for a smooth time, then eases down the tiller. At the same time the man tending mainsheet hauls main boom amidships slowly. (Do not haul it across midship line, for it then acts as a back sail.)
(*b*) Ease off the jib sheet.	Given when jib begins to shiver.

COMMANDS.	DUTIES.
(*c*) Let go fore sheet....	Given when foresail ceases to draw. If boat seems inclined to stop head to wind, haul jib sheet to windward; this will be taken aback and pay her head around. If boat gathers sternboard, shift the tiller.
(*d*) Shift over mainsheet	When wind is ahead, shift over the mainsheet and stand by to haul it aft when well around on the new tack.
(*e*) Haul aft fore and jib sheets.....	As soon as the bow of the boat has passed the wind, haul aft fore and and jib sheets, leaving the mainsheet slack until boat is well around, then trim by the wind. If the boat falls off too far from the wind, and there is little steerage way, haul aft mainsheet and keep jib sheet flying until she is brought up by the fore and mainsail and the tiller. When nearly high enough, haul aft the jib sheet and trim her by the wind.

(4) *To wear.*

(*a*) Stand by to wear...	Given as a warning for the crew to prepare for the evolution. The coxswain puts the tiller up when ready.
(*b*) Ease off main sheet.	Given as her head pays off, in order to get the maximum effect of the mainsail in increasing her headway. Keep fast fore and jib sheets until wind is abeam, as they help pay her head off.
(*c*) Ease off fore and jib sheets	Given when wind is a little abaft the beam. Slack the sheets off gradually to give headway.
(*d*) Up mainsail.....	Given when wind comes nearly aft. Brail up mainsail, leaving topmast halliards fast.

COMMANDS.	DUTIES.
(*e*) Shift over sheets...	Given when wind is aft. Stand by to haul all sheets aft on other side.
(*f*) Down mainsail.....	Given when wind is slightly on new weather quarter. Set mainsail and haul in flat aft; leave other sheets flying, or smothered into mast, so she will come up rapidly.
(*g*) Haul aft fore and jib sheets.....	Given as she comes by the wind on new tack. Haul both sheets flat aft.

NOTE.—If wearing in a light to gentle breeze, it is unnecessary to brail up the mainsail, but in a moderate breeze, or anything stronger, it should always be done on account of danger from gybing under those circumstances.

With a sloop rig, put tiller up and ease off sheets. When wind is nearly aft, trim in main boom to avoid danger from gybing violently. In anything stronger than a gentle breeze, sloop-rigged boats should always be tacked to avoid this danger. If absolutely necessary to gybe a sloop in a fresh breeze, the peak should be dropped in addition to hauling in main boom.

(5) *To brail up.*

(*a*) Stand by to brail up.	Designated thwartmen man the brails, men tending sheets stand by to slack them off. Bowmen stand by to lower away jib.
(*b*) Brail up.....	The clews of foresail and mainsail are hauled up, keeping fast the topmast halliards. The jib halliards are slacked off and head of jib hauled down in the fore sheets, keeping jib entirely inside the rail.

(6) *To heave to.*

(*a*) Stand by to heave to.	Given as a warning for the crew to prepare for the evolution. Coxswain brings boat by the wind and keeps tiller a-lee.

COMMANDS.	DUTIES.
(*b*) Haul main boom amidships. Haul aft weather jib-sheet. Up foresail	These commands are given simultaneously, and are obeyed by the men at the various stations. In heavy weather the foresail is brailed up, keeping fast fore-topmast halliards. In light breezes the foresheet may be simply slacked off. If bow falls off, slack away jib sheet The boat in this condition should lie dead in the water, wind about abeam.
(7) *To get under way from "Heave to."*	
Make sail	Haul aft fore and jib sheets, ease the tiller, and ease off the main boom.
(8) *To reef sail.*	
(*a*) Stand by to reef....	Given as a warning for the crew to prepare for the evolution. Tend all halliards. Pass reef points through eyelet holes, if not already rove off. Coxswain brings boat by the wind.
(*b*) Slack down the halliards	Coxswain luffs slightly, but not enough to cause boat to lose headway. Topmast and jib halliards are slacked down about 18 inches.
(*c*) Reef sail.....	Secure reef earings to tack of sails. Pass reef points around foot of sail. Earing in leech should be tightly bound around foot of sail, not around the boom. The bowmen report "*all ready forward.*" When ready command:
(*d*) Hoist away.....	Men at halliards hoist sails, and coxswain lays the boat on desired course. Always keep boat under control, if possible, while reefing. Reef whenever boat begins to take in water over the lee rail. Never be afraid of reefing too soon.

COMMANDS.	DUTIES.
(9) *To dowse sail.*	
(*a*) Stand by to shorten sail	Given as a warning for crew to stand by their stations. Tend topmast halliards, man brails, bowmen stand by jib tack and get it ready for slipping quickly.
(*b*) Shorten sail.....	Lower topmasts, brail up fore and main sails; ease off jib tack, keeping halliards fast; smother jib into foremast. Men sit on their thwarts awaiting next command.
(*c*) Furl sails.....	Bowman and second bowman, stroke and second stroke bundle all gear into sails; roll them up neatly around mast, making smooth skin; pass sheets around sails, binding them to masts.
(*d*) Prepare to unstep...	Cast off shrouds; bow and stroke oarsmen take a shroud in each hand, and, by repeated crossing from one side to another, frap each sail securely in to its mast; bind the shrouds together near foot of mast and tuck in all ends. Bow and stroke oarsmen report when all is ready for unstepping.
(*e*) Stand by; unstep ...	Make a slight pause between these commands. The bow and stroke oarsmen seize their respective masts and lift them vertically (inclining mast in direction it is to be lowered) until heel is clear of hole in thwart, then lower them, foremast on port side, mainmast on starboard side. Men amidships stand on bottom boards and help receive and stow masts. After masts are unstepped launch them bodily to stowing positions. Men quickly take seats on thwarts.

COMMANDS.	DUTIES.
	Care shall be observed to keep masts from going by the board or going down with a run, but even in this case it should be possible for men in the waist to receive them without injury to themselves.
	A well-drilled crew should easily be able to go from oars to sails, or vice versa, in one minute.
(*e*) Stand by; unstep....	Except with a considerably reduced crew, or in a heavy seaway, masts shall never be stepped or unstepped singly. It is not seamanlike and encourages laxity at drill.

(10) It will be observed that a distinction is made between "Shorten sail" and "Brail up." Shorten sail always requires topmasts to be lowered, while "Brail up" requires that they be kept fast. A similar distinction should be made between "In mainsail" and "Up mainsail" (or "Foresail"); "In mainsail" requires topmasts to be lowered; "Up mainsail" requires topmasts to be kept fast and the sail brailed up. "Shorten sail" and "Brail up" apply to both masts, working simultaneously. "In mainsail" (or "In foresail") are the commands used to take in either sail singly.

(11) In general it will be noted that the stroke oarsmen handle the main, assisted by the second stroke. The bow oarsmen handle the fore (assisted by second bowmen) until jib is cast adrift. They then devote their attention to the jib, leaving the work around foremast to the second bowmen. Stroke oarsmen handle main sheets; second stroke handles the main brails and halliards and attends foresheets. In general, the men on thwarts nearest the cleats attend the sheets regardless of the sail to which it belongs. The starboard bow oarsman is in general charge forward and the starboard stroke in general charge of the main, and these men will make necessary reports to the officer or petty officer in charge of the boat.

STANDING LUG RIG.

(1) The lug rig does not usually carry a jib. With that exception the following modifications of the foregoing drill for the sliding gunter will adapt that drill to the lug rig.

(2) *Stepping masts.*—In stepping, the proper slue will be with the halliard sheaves fore and aft, the standing part of the halliards being abaft the mast.

(3) *Loosing sail.*—The command is "Stand by to make sail." Starboard thwartmen light the mainsail aft and hook on the yard; second starboard stroke secures jaws of main boom in place; second port stroke stands by to hoist away on the halliards; port thwartmen clear away the foresail and hook on the yard; bowmen stand by to lash tack of foresail to eyebolt in the foremast and to hoist away on the halliards.

(4) *Making sail.*—Substitute "yards" for "topmasts" in the commands.

(5) *Tacking.*—The Navy rig being the standing lug, it is not necessary to dip the lug in going about. However, in making a long board on one tack it may be worth while to dip the lugs to leeward, as the sails will stand a little better. This can usually be done without touching the halliards, a man grasping the luff of the sail and the forward end of the yard and bearing down on them while the sheet is slacked.

(6) *Wearing.*—The main boom should be topped up when the wind is nearly aft, except in very light airs, and eased down again on the new lee quarter. In a strong breeze the mainsail should be lowered.

Brailing up.—Lug sails have no brails.

Heaving to.—Heaving to is not practicable unless there is a jib. In this case the commands are the same as with the sliding gunter, except that instead of "Up sail" the command is "Down foresail," whereat the foresail is lowered. Upon filling away again hoist the foresail.

Reefing.—Substitute "yards" for "topmasts" in the commands.

Dowsing sail.—At the command "Shorten sail," lower the sails and cast off foretack and jaws of main boom. At "Furl sail" starboard thwartmen unhook and furl mainsail, using the sheets as gaskets; port thwartmen unhook and furl foresail.

Unstepping masts.—At the preparatory order, cast off shrouds. At the final order, lift the masts out clear of the mast holes in the thwarts and place them as directed for the sliding gunter. Put the foresail and mainsail along their respective masts and lash them with the shrouds.

Q. What the the general instructions regarding TRIM?

A. To do her best under sail, a boat must be trimmed according to her build and rig. If she carries much headsail, she will have to be deeper forward than would otherwise be desirable. If she has little, or no headsail, she would trim by the stern. Weights should be kept out of the ends of the boat. Too much weather tiller can be corrected by shifting weights aft; too much lee tiller by shifting them forward.

Q. What instructions for sailing ON THE WIND?

A. Carry a little weather tiller. Keep sails full, sheets not too flat, everything drawing and the boat alive. Don't make the common mistake of getting sheets so flat that boat, while pointing high, really makes a course to leeward of that which she would make if kept away a little with sheets eased accordingly. If kept away, her speed will be greater than when jammed up into the wind in the hope of stealing a fraction of a point. Sheets may be hauled flatter in smooth water than in rough, and sheets of other rigs may be hauled flattter than those of dipping lugs. Keep the leech cloths of sails just trembling, with enough weather tiller to let the steersman "feel" that she wants to come into the wind. As the wind will vary from time to time, be watchful in order to bring her up or keep her away so she may always be at her best. If a heavy breaking sea is bearing down upon you, luff to meet it, and keep away again as soon as it has passed. If the boat loses way, she becomes helpless at once. It is dangerous to be caught on the beam by a heavy sea. If the course to be made in rough water would bring the boat into the trough of the sea, run off for a time with the sea on the quarter, then bring her up with the sea on the bow, and so make good the course desired without actually steering it at any time.

Q. What instructions for HANDLING THE SHEET?

A. NEVER BELAY A SHEET IN ANY WEATHER.

In a moderate squall luff sufficiently to shake, without spilling the sails, thus keeping headway enough to retain control, but with the sheets in hand (as always). If it comes stronger, luff more decidely and slack sheet. The sheet may, of course, be let go, and in a sudden emergency this must be done at once, in addition to putting the tiller down and, if necessary, reducing sail. But the longer you can keep boat under control, the better; and to let go the sheet is to give up control. The above instructions are for use when *on the wind*.

In running free, different instructions hold good. Here the sail cannot be spilled by a touch of the tiller; consequently, slack the sheet while luffing. The force of the wind would be reduced by running off. But if it comes too strong, you can do nothing but lower the sail, and the chances are that it will bind against the shrouds and refuse to come down. There is also danger that the wind will shift in a squall, causing the mainsail to gybe with violence.

Q. What instructions for REEFING?

A. Reef when the boat begins to take water. Even in smooth water, never let her heel too much. Station men before begin-

ning to reef. Make all hands keep seated. One hand hauls down halliards as required, another hauls down on the leech and shifts the tack. Haul sheet in enough to let men detailed for reef points get hold of and gather in the foot. Slack and shift sheet. Pass reef points. Man the halliards. Hoist sail. Trim sheet. Keep boat under command while reefing. Reef all sails at the same time, unless the sea is dangerously heavy, or the crew short handed.

Q. What instructions for RUNNING BEFORE THE WIND?

A. This is the most dangerous point of sailing in a fresh breeze, because of the chance of gybing. The danger increases if the boat yaws. She will have a tendency to do this if trimmed at all by the head. Therefore, in running, keep the weights fairly well aft, though never at extreme after end. Very careful steering is necessary. If the sea is rough, avoid running with wind dead aft. To make good a course directly to leeward, bring wind first on one quarter, then on the other. If breeze is strong enough to make gybing dangerous, clew up mainsail, or drop peak whenever the course is changed. A serious danger in running before a heavy sea is that of "broaching to." The yawing may be reduced by keeping the weights aft and by steering with an oar. Another danger in running is that the boom may dip in the water as she rolls, and thus capsize the boat.

Q. What instructions for TACKING?

A. After-sail tends to bring a boat head to wind, head-sail to keep her off. A short, full boat will turn to windward better than a long, narrow one, and consequently it is preferable for working up a narrow channel. Under the best conditions, a boat with good way on fills away on the new tack without losing headway. If conditions are not so favorable, tacking is not so simple. If there is a sea on the bow, wait for a smooth time to ease the tiller down. Haul main boom amidships gradually and keep the foresail full as long as it will draw. Haul aft jib sheet which was in use before beginning to tack. Never hold jib out directly. This is too often seen but it simply stops the boat without even paying her off. Carrying the weights forward is favorable for tacking, but when a boat has sternboard, she may be helped around by putting a few of the crew on the (new) lee quarter, where their weight might cause the bow to fall off.

Q. What instructions for WEARING?

A. Put the tiller up. Slack the mainsheet away roundly. As the boat goes off before the wind, gybe the mainsail, or brail it up and shift over. Haul boat up on the new tack,

losing more or less to leeward, according to circumstances. Gybing would be dangerous in a fresh breeze; in this case always brail up the mainsail.

GENERAL RULES FOR BOATS UNDER OARS.

Q. What are the instructions for manning the boat?

A. Always man the boat over the boom. All of the crew should be in the boat in about *one minute* after the pipe or the call. The crews of running boats should remain on deck, near the lower boom, waiting for a call.

Q. What is the longest time a boat should require between the time it is called away and the time it is reported ready to shove off from the gangway?

A. Never any longer than *three minutes.*

Q. What general instructions in regard to stroke?

A. Pull a smart, steady stroke at all times. The first part of the stroke is to be pulled with straight back and arms, *keeping the eyes always in the boat.* The body should move directly to the front and rear. Always use the back in pulling.

Before an ordinary seaman is rated seaman, he must prove to the satisfaction of the officers who examine him that he is a good oarsman.

Q. What are the instructions when laying on oars?

A. They must be horizontal, with blades feathered. The crew must sit upright. Each man must have both hands on the handle of the oar. Don't lounge on the oars.

Q. When oars are tossed?

A. Hold them vertical, with blades fore-and-aft, handles of oars on bottom boards. Each man should have the wrist of his inboard hand resting on his thigh, outboard hand grasping loom of oar at height of chin. Sit up.

In tossing after the command "Way enough," boat the oars carefully and *quietly.*

Q. What about cutting close around the bow or stern of a ship?

A. Never do it. Don't cut close around points of land, either.

Q. Who may sit abaft the backboard?

A. Only the coxswain and the boat officer.

For other General Rules, see Part II, "O."

GENERAL RULES FOR BOATS UNDER SAIL.

1. Never be afraid to reef in good time.

2. Always see sails well set, and trimmed according to the direction of the wind.

3. See that sheets are never belayed.

4. See that crew is properly stationed for making and shortening sail, reefing and tacking.

5. Trim boat by shifting crew or ballast as required.

6. Make the crew sit on the thwarts. In making sail, no one will stand up, except when absolutely necessary, and even then, only on bottom boards of a boat.

7. Remember that a loaded boat carries more way than an empty one.

8. In coming alongside, allow plenty of room for rounding to. Unstep the masts as soon as the sail is lowered. If you are not likely to come alongside in a seamanlike fashion, tack or wear and try again.

Q. What will be expected of a seaman acting as coxswain of a boat?

A. That he will not only know everything under the headings "O" of Part II, and "S-1" of Part III of "The Bluejacket's Manual," but also all the subjects in regard to boats that are required for the rating of coxswain (See "b-1," etc.).

BOAT SALUTES AND BOAT ETIQUETTE.

Q. You are coxswain of a pulling boat, how do you salute a flag officer passing in another boat with flag flying?

A. Toss oars. Stand up and salute with hand. Remain at salute until it is returned, or the flag officer has passed without noticing your boat.

Q. Who is a flag officer?

A. Any officer of the line of the Navy above the rank of captain.

Q. Suppose the officer to be saluted is a general officer of the Army, how do you salute?

A. The same as for a flag officer of the Navy.

Q. Suppose your boat is fitted with swivel rowlocks so you cannot toss oars, how do you salute a flag officer?

A. Trail oars. Stand up and salute with hand.

Q. Suppose you are coxswain of a laden boat or a towing boat, how do you salute the flag officer?

A. Make the hand salute only. Don't stand up.

Q. If you are coxswain of a boat under sail, how do you salute the flag officer?

A. Make the hand salute only. Don't stand up.

Q. What are the instructions for saluting when you are coxswain of a power boat?

A. In power boats, engines are to be stopped in all cases in which pulling boats toss, trail or lay on oars.

Q. Suppose the flag officer does not have his distinctive flag flying, how do you salute him?

A. Stand up and salute with hand. Don't toss or trail oars.

Q. You are coxswain of a pulling boat, how do you salute a commanding officer above the rank of lieutenant who passes in another boat with his pennant flying?

A. Lay on oars. Stand up and salute with hand.

Q. Suppose you are coxswain of a laden or towing boat, or a boat under sail?

A. Salute with hand. Don't stand up.

Q. Suppose the commanding officer is not flying his pennant?

A. Rise and salute with hand. Don't lay on oars.

Q. How do you salute other commissioned officers?

A. Rise and salute with hand. If you are coxswain of a laden or a towing boat, or a boat under sail, don't stand up.

Q. How do you salute a warrant officer?

A. Salute with hand.

Q. You are coxswain of a boat of any type, what do you do when an officer enters or leaves your boat?

A. Rise and salute him.

Q. If you are a passenger in the stern sheets of the boat, do you salute on these occasions?

A. Yes; rise and salute.

Q. If you are one of the crew, do you ever salute in the boat?

A. No; not unless you are detailed as boatkeeper. For the salutes required of boatkeepers, see Part II, "O."

Q. What about saluting foreign military or naval officers, or officers of our own Army, Marine Corps, Naval Militia, or Revenue Cutter Service?

A. Salute them in the same manner as you would United States naval officers of the same rank.

Q. What is the "position of attention" in a boat?

A. Sit erect on thwart or in stern sheets.

Q. How do members of the crew salute officers at landing places?

A. They sit at attention. This takes the place of the salute. The coxswain and any enlisted men who may be passengers in the stern sheets rise and salute.

Q. You are a passenger in a running boat that contains officers, what must you remember?

A. To keep quiet.

Q. You are outside of the canopy of a power boat that salutes another boat in passing, what do you do?

A. Stand at attention and face the boat.

Q. You are outside the canopy of a power boat that contains an officer in whose honor a ship that you are passing parades a guard or otherwise salutes, what do you do?

A. Stand at attention, facing the ship.

Q. You are coxswain of a power boat containing an officer for whom a salute is being fired, what do you do?

A. Stop engines at first gun of salute. Head boat up parallel to the saluting ship. See that men outside canopy stand at attention and face the saluting ship.

Q. You are a coxswain of a boat rapidly overhauling another boat that contains officers, what do you do?

A. Never pass without slowing down and asking permission to do so. Always give way to a senior boat at a landing place or gangway, unless otherwise directed by officer of the deck or beachmaster.

Q. You are a passenger in a boat at night, returning to the ship. There are no officers, either of commissioned or warrant rank, in the boat. From the deck of the ship the quartermaster hails "Boat Ahoy." What is the proper answer for the coxswain to make?

A. "Hello."

Q. Suppose you are hailed by the quartemaster of another ship than your own, and one where you do not contemplate going alongside, how does the coxswain answer the hail?

A. "Passing."

Q. You are on deck, waiting to go ashore. There are several officers waiting to embark in the same boat in which you are going to take passage. Do you enter the boat before, or after, the officers?

A. Before them, unless notified to the contrary. Juniors enter boats ahead of seniors, and leave them after seniors.

Q. What do you do in disembarking?

A. Wait until the officers have left the boat, unless you are told to do otherwise.

Q. Give RULES OF THE ROAD that apply to boats.

RULES OF THE ROAD.

NOTE.—The following is a summary of the "Rules of Preventing Collisions at Sea and upon Inland Waters of the United States" which apply to boats.

LIGHTS.

The rules concerning lights shall be complied with in all weathers from sunset to sunrise.

(1) All power boats under 26 feet in length shall carry aft a white light to show all around the horizon, and forward, lower than the white light aft, a combined lantern showing red to port and green to starboard, so fixed as to throw the light from right ahead to 2 points abaft the beam on each side.

(2) All power boats designed to be carried on board ship, and 26 feet or more in length, shall carry (*a*) a bright white light as near the stem as practicable showing 10 points on each side of the vessel; that is, from ahead to 2 points abaft each beam; (*b*) a white light aft to show all around the horizon; (*c*) a screened green side light on the starboard side and a screened red side light on the port side, constructed and fixed as prescribed for steam vessels.

(3) Rowing boats, whether under oars or sail, shall have ready at hand a lantern showing a white light, which shall be temporarily exhibited in time to prevent collision.

(4) For an anchor light an ordinary hand lantern showing a white light is to be exhibited when required.

SOUND SIGNALS FOR A FOG.

(1) All power boats designed to be carried on board ship are provided with a whistle or other sound-producing appliance capable of producing a blast of 2 seconds' or more duration.

(2) All power boats designed to be carried on board ship, and 26 feet or more in length, shall carry an efficient fog horn and an efficient bell.

(3) In fog, mist, falling snow, or heavy rainstorms, whether by day or night, a power boat makes the following signals at intervals of not more than one minute:

(a) If under way and not towing or being towed, a prolonged blast of two or more seconds on the whistle or foghorn.

(b) If under way and towing, three blasts in succession on the whistle or foghorn, namely, one prolonged blast followed by two short blasts.

(c) If at anchor, ringing of the bell for about five seconds.

(4) A power boat is under way within the meaning of these rules when she is not anchored or made fast to the shore or a ship, or aground.

SPEED IN FOG.

Boats shall, in a fog, falling snow, or heavy rainstorms, go at a moderate speed.

STEERING AND SAILING RULES.

(1) WHEN TWO BOATS UNDER SAIL are approaching one another so as to involve risk of collision, one of them shall keep out of the way of the other, as follows:

(*a*) A boat which is running free shall keep out of the way of a boat which is close-hauled.

(*b*) A boat which is close-hauled on the port tack shall keep out of the way of a boat which is close-hauled on the starboard tack.

(*c*) When both are running free, with the wind on different sides, the boat which has the wind on the port side shall keep out of the way of the other.

(*d*) When both are running free, with the wind on the same side, the boat which is to windward shall keep out of the way of the boat which is to leeward.

(*e*) A boat which has the wind aft shall keep out of the way of other boats.

(2) WHEN TWO BOATS UNDER POWER OR OARS are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard so that each may pass on the port side of the other.

(3) When two boats under power or oars are crossing so as to involve risk of collision, the boat which has the other on her own starboard side shall keep out of the way of the other.

(4) When a boat under power or oars and a boat under sail are proceeding in such directions as to involve risk of collision, the boat under power or oars shall keep out of the way of the boat under sail.

(5) Where by any of these rules one of the two boats is to keep out of the way, the other shall keep her course and speed.

(6) Every boat which is directed by these rules to keep out of the way of another boat shall, if the circumstances of the case admit, avoid passing ahead of the other.

(7) Every boat under power which is directed by these rules to keep out of the way of another boat shall, on approaching her, if necessary, slacken her speed or stop or reverse.

(8) Every boat, whether under power, oars, or sail, when overtaking any other shall keep out of the way of the overtaken boat.

(9) Any boat under power approaching another which is in sight of her shall indicate what course she intends to take by the following signals on her whistle:

(*a*) One short blast to mean "I am directing my course to starboard."

(*b*) Two short blasts to mean "I am directing my course to port."

(*c*) Three short blasts to mean "My engines are going at full speed astern."

(*d*) The words "short blast" to mean a blast of about one second's duration.

(10) In a narrow channel every boat under power or oars shall, when it is safe and practicable, keep to that side of the fairway or mid-channel which lies on the starboard side of such boat.

(11) Whenever a boat under power is nearing a short bend or curve in a river or harbor she should give a long blast on the steam whistle.

(12) Boats under power when leaving a ship to proceed ahead and cross to the other bow should give the proper signal on whistles.

(13) Due regard shall be had to all dangers of navigation and collision, and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger.

NOTE.—An ordinary seaman about to be examined for seaman should read the rules of the road as given above very carefully. If he does not understand any of the rules, he should ask his division officer or a petty officer. In examining men for advancement to the rating of seamen, the officers conducting the examination will probably obtain best results by making diagrams showing the various conditions of boats under oars and sail and power boats meeting and passing, and then asking the candidate which boat has the right of way, and why. Likewise this method should be adopted in instructing seamen in the Rules of the Road.

BUOYS.

Q. In coming from seaward, what color buoys mark the starboard or right-hand side of the channel?

A. Red.

Q. What color buoys mark the port, or left-hand side?

A. Black.

Q. How are dangers and obstructions marked?

A. By buoys with black and red horizontal stripes.

Q. On which hand should these buoys be left?

A. They may be left on either hand.

Q. How are buoys that indicate the fairway marked?

A. With black and white vertical stripes. These buoys should be passed close to.

Q. How are sunken wrecks marked?

A. By red and black buoys, horizontal stripes. These buoys are the same as obstruction buoys. In foreign countries sunken wrecks are frequently marked by green buoys.

Q. What color are quarantine buoys?

A. Yellow.

Q. What are white buoys used for?

A. As they have no special meaning, they are often used for special purposes not connected with navigation.

Q. How are the starboard and port channel buoys numbered?

A. The numbers begin from the seaward end of the channel. Black buoys have odd numbers. Red buoys have even numbers.

Q. Why are perches with balls or cages sometimes placed on buoys?

A. Such buoys are at turning points. The color and the number indicate on which side they shall be passed.

Q. What types of buoys are in common use?

A. Nun, can and spar.

Q. What is the shape of a nun buoy?

A. Conical.

Q. Of a can buoy?

A. Cylindrical.

Q. When does a buoy "watch?"

A. When it floats properly on the surface of the water at all times.

PART THREE

"S–2"

MARLINESPIKE SEAMANSHIP

Note: Also see Part II, "P"

PART THREE.

"S-2."

MARLINESPIKE SEAMANSHIP.

Q. In addition to the marlinespike work required for ordinary seamen as given in Part II, what practical marlinespike work is required for seamen?

A. The following requirements are absolutely practical. All this work is liable to be required on a modern battleship. A seaman should be able to make the following knots and splices with absolute accuracy and reasonable rapidity:

1. Make an eye splice in a 3-stranded rope.
2. Make a short splice in a 3-stranded rope.
3. Put on a neat sailmaker's whipping with palm and needle.
4. Put on a flat seizing of 7 turns, cross and secure end, showing a square knot.
5. Serve with spunyarn or marline two feet of three to four-inch manila or hemp rope.
6. Make a Mathew Walker knot.
7. Make the following hitches and bends: Clove hitch, sheet bend, blackwall hitch, bowline, timber hitch, sling an open barrel, throw a heaving line. Put a strap on a rope so it will not slip when tackle is hooked and a strain put on it.
8. Make square and figure of 8 knots, sheepshank and cat's paw.

Some of these knots should have been learned by every ordinary seaman, as given in Part II. All these knots and splices are practical; no amount of book explanation or learning will make a man proficient in them. Proficiency can be acquired only by constant and pains-taking practice.

Q. How would you splice an eye in a wire rope?

A. Allow more end than for a hemp rope. Put the whole strand once under two strands, two-thirds under next strand, and then one-third under next strand. Set it up and stretch it well, then break off wires close to rope.

PART THREE

"S–3"

DECK SEAMANSHIP

Note: See also Part H, "R"

PART THREE.

"S-3."

DECK SEAMANSHIP.

Q. Name the various TACKLES used on board ship for special purposes.

A. 1. DECK TACKLES are heavy twofold purchases used in handling ground tackle, mooring ship and for other heavy work around decks.

2. PENDANT TACKLES are heavy twofold tackles hooked to lower pendants, used for setting up lower shrouds or steadying masts in case rigging slacks. They are also used for general work about the decks.

3. YARD TACKLES are used on the lower yards for hoisting in stores.

4. STAY TACKLES hook to collar of lower stay and are for hauling in and landing on deck articles hoisted by yard tackles.

5. FISH FALLS are heavy twofold or threefold purchases for fishing anchor and getting it on bow.

6. TOP BURTONS hook to topmast pendants. They are used for setting up rigging, securing lower yards when hoisting weights and for other purposes.

7. WATERWHIPS are gun tackles used as yard tackles for hoisting in moderate weights.

8. SAIL TACKLES are tackles—usually top burtons—for sending topsails aloft.

9. RELIEVING TACKLES are used to assist or replace tiller ropes in steering. One block hooks to the tiller and the other to ship's side.

10. STOCK AND BILL TACKLES are used on old-fashioned ships for getting anchors on the bows.

11. THWARTSHIP TACKLES. Any tackle leading athwartships is so called. The tackles used on heads of boat davits for rigging out are so called.

12. JIGGERS are light luff tackles used for miscellaneous deck work.

13. HATCH TACKLES are used at hatches for hoisting and lowering stores.

14. BOOM TACKLES are double purchases used on fore-and-aft vessels to guy boom out over the quarter.

15. FORE-AND-AFT TACKLES stretch out backbone of awning.

16. JEER FALLS are heavy purchases for sending lower yards up and down.

17. REEF TACKLES are used to haul up leech of sail in reefing.

18. WATCH TACKLES are common luff purchases, or jiggers, for miscellaneous use.

Many of these tackles are used only on sailing vessels, but it is considered that the seaman should have a good general idea of the use of each of them.

Q. How find weight a given purchase will lift, within a safe working limit?

A. Multiply "safe working load" by the parts at the movable block, then mutiply by 10, and divide by 10 plus the number of sheaves.

Q. How FIND THE SAFE WORKING LOAD?

A. Square the circumference and multiply by 285. This gives the safe working load in pounds.

NOTE.—To square a number, multiply it by itself. For example, the square of 4 is 4 times 4, or 16.

Q. How find the size of a rope required to lift a given load when rove as a tackle?

A. If load is expressed in tons, add one-tenth to the weight for the sheave, and divide by the number of parts at the movable block.

Q. How many pounds in a ton?

A. 2,240.

Q. Describe each of the following tackles: RUNNER, GUN-TACKLE PURCHASE, LUFF TACKLE, TWOFOLD PURCHASE, TREBLE OR THREEFOLD PURCHASE?

A. These are the principal tackles in general use. Others are modifications of these, and they take their names from the purposes for which they are used. These five tackles are described in Part II, "R."

Q. What other tackles are sometimes seen?

A. Single Spanish burton, double Spanish burton, Bells purchase, sometimes used for topsail halliards, and "luff on luff," in which a luff tackle is bent to the hauling part of another luff tackle.

Q. What is a winding pendant?

A. One end of a pendant secures around topmast head, and th other reeves through eye of lizard secured to lower yard-arm. The strain is thus taken on the mast.

Q. What is a parbuckle?

A. The middle of a rope is made fast, and the ends are taken around and underneath the object to be moved which is then hauled up on skids.

Q. Which is the less affected by friction, manila or hemp rope?

A. Manila. The stiffer the rope, the greater effect has friction.

Q. What is a "thoroughfoot" in a fall?

A. When a block gets capsized, thus crossing the parts of a fall.

Q. What is meant by "fleeting a tackle?"

A. When blocks get near together, the moving block is shifted to get a new nip. This is called fleeting the tackle.

Q. What is "swigging off?"

A. Pulling at right angles on the bight of a rope that is fast at both ends.

Q. How reeve off one rope by using another?

A. Marry ends of two ropes by laying three yarns of spun-yarn in the lay of ropes. Haul on old rope and reeve new one in its place.

COALING SHIP.

Q. What details require special attention at coaling?

A. Coaling ship is an evolution during which all ship's duties, except the absolutely necessary ones, are suspended. All officers, chief petty officers, and men of inferior ratings have stations for coaling ship. The object is not only to get the coal on board, but to do it in *the minimum of time;* and in order that no delay may occur at any stage, men must be trained in *team work.* The following details should be given special attention; holding bags, hooking on, hoisting, landing bags on deck or on trucks, unhooking, overhauling hooks, handling empty bags on deck, handling empty bags in lighters.

Q. What, in general, must be done by the various divisions in preparing for coaling?

A. Provide hawsers fore-and-aft, bend on heaving lines, and have hawsers ready to be passed when coal barges or colliers come alongside.

Clear away life lines, hinge down stanchions, rig in lower booms.

Rig coaling booms and chutes, coaling shute screens, and nets, if required.

Close and batten down hatches, as ordered.

Provide coal bags, shovels, grapnel, coaling screens, whips, coaling trucks, backstays and guys for coaling booms.

Provide cane fenders fore-and-aft.

Unrig gangway fenders; trice up ladders; hinge over to rail, and lash, if necessary. Unship gangways, if ordered.

Take off all scuttle plates.

Q. What are the general duties of the deck divisions after coaling?

A. Men will first bathe, then scrub clothes and canvas gear, boat covers and hatch covers; then scrub paint work, decks with sand, clean boats and all gear.

GETTING UNDERWAY.

Q. What are the general duties of the deck divisions in making preparations to get underway?

A. Get up bridge screen.
Secure chests and everything else about the decks.
Furl awnings.
Rig leadsmen's chains.
Rig sounding platform and machine.
Unrig and stow portable ash chute.
Get up boat covers.
See all clear around propellers.
Get towing spar and towline ready.
Put on weather cloths of searchlight platforms.
Set up smoke pipe guys.
Hoist in all boats.
Side cleaners take in grab ropes and scupper lips.
Rig in gangways, lower and quarter booms.
If alongside dock, single lines.
Secure lifeboats for sea.

PREPARING FOR HARBOR.

Q. What are the general duties of the deck divisions in preparing for harbor?

A. Prepare life boats for port.
Square up boats at davits.
Get boats ready for going out.
Get up, or overboard, all ashes, garbage, and refuse.
Send leadsmen to the chains.
Have both anchors ready for letting go.
Lower wash clothes.
Get out both gangways.
Rig lower booms.

MOORING TO DOCK.

Q. What are the general duties of the deck divisions in mooring ship to dock?

A. Fake down hawsers fore-and-aft; bend heaving lines.

Provide line for lashing shoe for spur shores.

Provide cane fenders fore-and-aft.

Provide deck jiggers and heavy straps for landing gangways.

After lines have been secured ashore, pass heel lashings on spur shores, and pass mooring chains through mooring irons.

NOTE.—Although the following pages are inserted for the special benefit of those who are called upon to make a cruise in a sailing vessel, it will be well for all hands to read them carefully, and, if time permits, devote a certain amount of study to them. The seamanship given in the following pages is the foundation of the knowledge of seamanship required on the modern battleship. And many of the customs observed as well as the terms in common use today, cannot well be understood without a knowledge of the following subjects:

QUESTIONS ON SPARS AND SAILS.

Q. What are the masts and how named?

A. They are upright spars placed in a vessel to support the yards and booms. Counting from forward they are named the foremast, the mainmast, the mizzenmast. (If only two masts, fore and main.)

Q. Into how many parts is each mast divided?

A. Four. The lowermast, topmast, topgallant mast, and royalmast.

Q. Why are these divisions made?

A. A spar of sufficient length could not be obtained for the entire mast, and even if so, it could not be given the proper side support. Besides, it is necessary to send down the upper parts of the mast in heavy weather, and at other times.

Q. How are the masts arranged and secured in place?

A. The lower part of the mast rests on a "step" on the keelson in the bottom of the ship. It comes up through the various decks which are strengthened by "partners," and is held in place by "stays" and "backstays" running forward and aft, and by "shrouds" on either side. Water is kept out of the opening in the deck by wedges and a mast coat. The topmast rests on a "fid" on "trestle trees" on the lowermast, passes up through the "cap," and is held in place by "shrouds" and "stays." The topgallant and royalmasts are in one piece, and are similarly held in place.

Q. What are yards?

A. They are pieces of timber, or spars, suspended horizontally from a mast upon which sails are spread. They are named from the mast they are on and the sail they spread; e. g., maintopsail-yard, fore-royal-yard, etc.

Q. What are gaffs?

A. Small projecting spars abaft the masts. They are used to spread upper parts of trysails and spankers.

Q. What is a boom?

A. A long spar used for various purposes, often to extend the foot of a sail; studding-sail booms, spanker booms. The lower, or swinging, booms are now used mainly for boats

Q. Where is the cross-jack yard?

A. It is the lower yard of the mizzen. No sail is spread on it.

Q. What are the names of some of the other yards?

A. Fore yard, foretopsail, foretopgallant, fore royal, and same on main; mizzen-topsail yard, mizzen-topgallant and royal.

Q. What are the "head yards?"

A. The yards crossed on the foremast.

Q. What are the spars forward on a sailing ship?

A. The bowsprit, corresponding to the lower mast, the jib-boom to the topmast and the flying-jib-boom to the topgallant and royal mast. In order to give lead to the rigging and hold these "head booms" in place are the "whisker booms" extending out horizontally on each side of bowsprit, and the "dolphin striker" hanging vertically below it.

Q. What are the jib, flying jib, and staysails?

A. The jib is a triangular sail hoisted on the jib stay. The flying jib is a similar sail hoisting on the flying jib stay. Staysails are three-cornered sails hoisting on the various stays.

Q. What are square sails; fore-and-aft sails?

A. Square sails are those that are spread by yards. Fore-and-aft sails are spread by gaffs and booms, or hoist on stays.

Q. What are head sails? After sails? Light sails?

A. Head sails are those that are spread on and forward of foremast. After sails are those on main and abaft it. Light sails are the topgallant-sails, royals, flying jib, and topgallant staysails.

Q. What are awnings?

A. They are canvas coverings spread over the deck of a vessel to protect the crew from the weather. Awning stanchions secured outside the ship along rail support the ridgerope to which the awning is hauled out by the earings and stops.

The space between the awning and the deck is protected when necessary by awning or side curtains.

Q. What is a mast cover?

A. A canvas cover placed over a mast when going to sea to protect it from the smoke and heat from smokepipe.

Q. What are the "lower booms" and their uses?

A. They are the long booms rigged outside of the ship abreast foremast. They were formerly used for spreading the lower studdingsail. They are now used only in port, and then for boats to secure to.

Q. What are studdingsails? (Pronounced stun-sails.)

A. Sails that are set outside of the square sails. They are spread at the top by yards and at the bottom by booms.

Q. What other sails are sometimes used at sea?

A. Skysails, small sails set above royals. Sky-scrapers, a triangular sail set above skysails (sometimes called star-gazers). Inner jib, a sail set just inside of jib. Jib-o-jib, a sail set outside of flying jib. Jib topsail, a small sail set on the topmast stay of sloops or schooners. Merchantmen also use double topsail-yards. Rolling topsails are sometimes seen.

Q. What are masts and bowsprits made of?

A. Wood, iron, or steel. Wood used is pine, spruce and fir. Iron and steel are used principally in vessels made of that material. Being hollow, they act as ventilators. Wooden lowermasts are usually made of four pieces united by hoops, the inner corner of each is cut off leaving a square hole in the center.

Q. What is the step?

A. The timber on which the heel, or lower end, of the mast rests.

Q. What are the various parts of a mast?

A. MASTHEAD—From where the rigging is placed to the top of the mast.

BIBBS—Side pieces bolted to the hounds to support trestle trees.

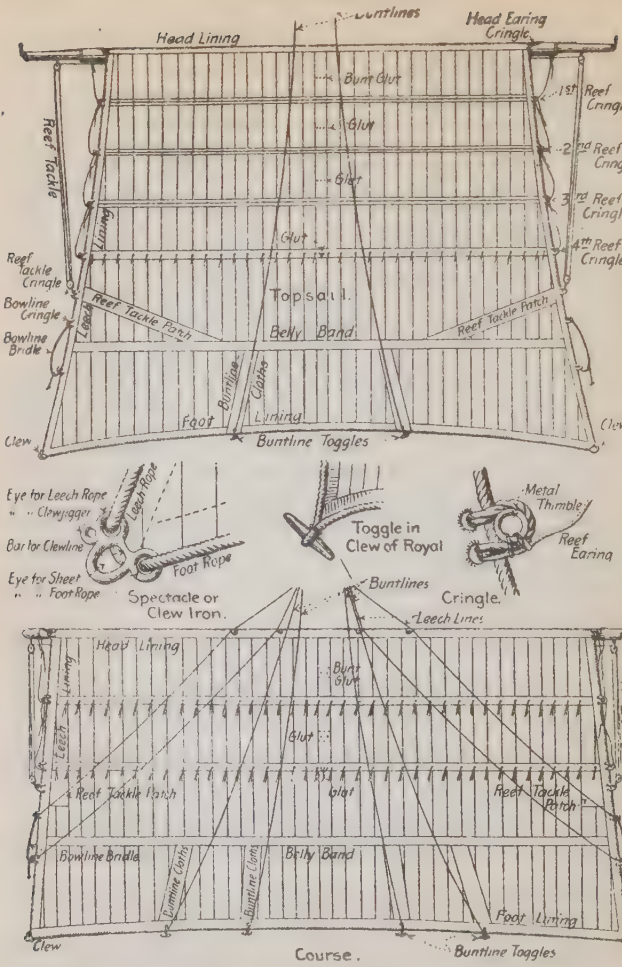
HOUNDS—Projections at the masthead which support trestle trees of lower and topmasts, and rigging of upper masts.

TRESTLE TREES—Fore-and-aft pieces, one on each side of masthead.

CROSS TREES—Two cross pieces on top of trestle tree. The "horns" of the cross tree are the outer ends of arms.

Q. What are tops?

A. They are platforms made of oak or steel. In wooden ships they rest on trestle trees. Used to spread topmast rigging. In steel ships they are used to mount small guns and searchlights.



SQUARE SAILS, MAN-OF-WAR. (FORWARD SIDE.)

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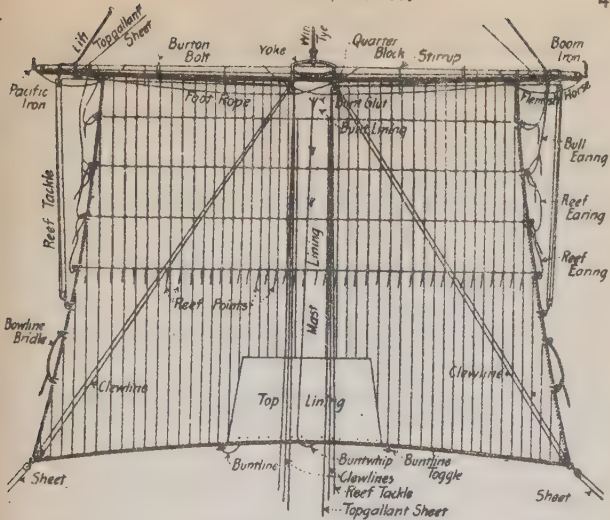
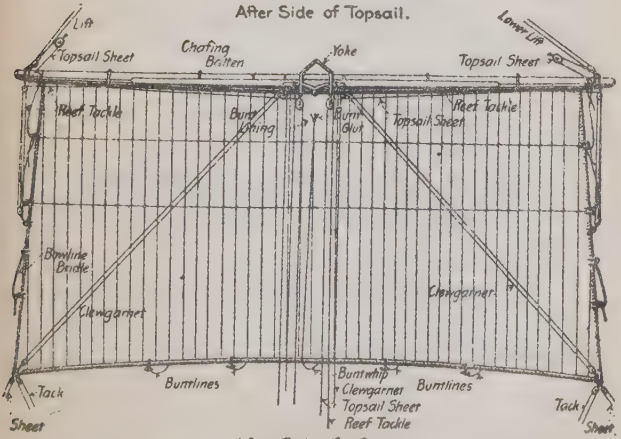


After Side of Topsail.



After Side of a Course.

SQUARE SAILS, MAN-OF-WAR.

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Q. What are the doublings?

A. The portion of the two masts between the trestle trees and cap.

Q. What is a cap?

A. A thick iron-bound block of wood, fixed upon the head of the mast for an upper mast to pass through. It supports the upper mast in position.

Q. What is a "cap-shore?"

A. A support under the fore part of a lower cap to prevent it drooping.

Q. What are mast wedges?

A. Pieces of wood placed between the mast and partners to keep mast upright in place.

Q. What are bolsters?

A. Pieces of oak placed on trestle trees for the eyes of the rigging to rest on to prevent a sharp nip.

Q. What is the "jack?"

A. An athwartships iron bar at topgallant masthead, for spreading royal rigging. The topgallant funnel and jack are in one.

Q. What are the "bees?"

A. Chocks of wood on each side of the bowsprit for fore-topmast stays to reeve through.

Q. What is the saddle of the jibboom?

A. A chock of wood on top of the bowsprit, in which heel of jib-boom rests.

Q. What are jaws?

A. Two pieces of wood on inner end of a gaff or boom, forming a semi-circle to keep it in place against its mast. Also on yards amidships.

Q. What is a fid-hole?

A. A hole in the heel of a topmast or topgallant mast for the fid, which is a bar of iron or wood put through the fid-hole and across the trestle trees to support topmast or top-gallant mast.

Q. What is a sheave hole?

A. An opening cut in a spar in which a sheave is fitted to reeve a rope through.

Q. What is a dumb sheave?

A. It is simply a groove in the heel of a spar for a hawser to lie in.

Q. What is the truck?

A. A circular piece of wood on the head of the royalmast In it is a sheave for signal halliards.

Q. What is the lightning conductor?

A. A small copper rope, extending from the top of each royalmast, down royal backstay to waterline or copper sheathing. This end of the conductor should always be in the water during rain or showers.

Q. What is a jack-staff?

A. A short staff forward on which the "jack" is hoisted.

Q. What is the flag staff?

A. A staff rigged astern on which colors are hoisted when at anchor.

Q. What is meant by a spar "buckling?"

A. The bending of a spar when not properly supported or when too much strain is put upon it.

Q. Where are spars most likely to decay?

A. At the heel, partners, and cap. Anywhere, in fact, where the water can get in and air cannot freely circulate.

Q. What are the slings of a yard?

A. The center, or middle, of the yard. Also applied to the chain which supports lower yards by going around lower masthead.

Q. What are the jaws?

A. The projections at the slings embracing each side of the mast.

Q. What are the yard-arms and quarters?

A. The ends of the yards are the yardarms. The part between the yardarms and the slings are the quarters.

SAILS.

Q. Of what material are sails made?

A. In the Navy of flax canvas. In merchant service sometimes of cotton.

Q. How is canvas graduated as regards strength?

A. No. 1 is the strongest. From that it goes to No. 10, the finest.

Q. What sails are made of the coarsest canvas?

A. Storm sails. These usually are fore-and-aft sails.

Q. What are the fore-and-aft storm sails?

A. The fore, main, and mizzen storm staysails, fore and main trysails, and the storm mizzen set abaft the mizzenmast

Q. What are the cloths of a sail?

A. Strips of canvas forming the sail.

Q. What are the principal parts of a square sail?

A. Head, foot, leeches, clews, head-earing cringles and bunt.

Q. Describe them.

A. The head is the upper edge which is made fast to the yard. The leeches are the two sides. The foot is the lower edge. The clews are the two lower corners. The head-earing cringles are the cringles spliced in the two upper corners for the head-earing. The bunt is the middle part of the sail.

Q. What is a cringle?

A. It is a piece of rope worked around into the roping, and fitted with thimbles. It is for the purpose of securing gear to the sail.

Q. What is the bolt rope?

A. The rope sewed around the sail along the edge.

Q. What is the tabling?

A. The double part of canvas around edge to which bolt rope secures.

Q. What are head-holes?

A. Eyelet holes in the head of sails for the robands.

Q. What are eyelet holes?

A. Holes in the tabling, reefbands, etc., for cringles, reef-points, etc.

Q. What are robands?

A. Pieces of spun or rope yarn hitched through the head-holes for securing sail to the jackstay on yard. The middle roband is called the midship roband. It is of larger stuff, and is the first one passed in bending.

Q. What are the reefbands?

A. Double pieces of canvas sewed across the sail for working the eyelet holes for reefpoints and to take strain when sail is reefed. The first and second reefbands are usually fitted as French reefs with grab lines for beckets and toggles, and the third and fourth bands with reefpoints.

Q. How many reefbands do square sails usually have?

A. Courses two; topsails three and four, except mizzen, which sometimes has two. Last reef is called close reef.

Q. What is the bellyband?

A. An extra piece of canvas sewed across the topsail or course, below the lower reefband for additional strength.

Q. What is a footband?

A. An extra piece of canvas sewed along the foot of a sail on the after side.

Q. What is a top lining?

A. The extra piece of canvas sewed on the after part of a topsail from the bellyband to the foot, to protect sail from chafe of top.

Q. What is the mast lining?

A. An extra piece of canvas sewed on after part of a sail to protect it from the chafe of the mast.

Q. What are buntline cloths?

A. Extra pieces of canvas on the forward part of the sail, extending from the foot to the bellyband, in wake of and to take chafe of the buntlines.

Q. What is a reef-tackle patch?

A. The extra piece of canvas sewed on the forward part of the sail at the reef-tackle cringles to take the strain off the reef tackles.

Q. What are head earings?

A. Pieces of rope spliced into the head-earing cringle to haul the head of the sail taut along the yard.

Q. What are reef earings?

A. Pieces of rope spliced to the eyelet holes below each reef-earing cringle and spliced to the cringle. Each earing is made fast to the earing next above. They are used in reefing to haul up the cringle and make it fast to the yard.

Q. What are bowline bridles?

A. Pieces of rope spliced into the bowline cringles, having a toggle to which the bowline is toggled.

Q. What are spectacles?

A. Pieces of iron with three or more eyes, spliced into the boltrope in the clew of each square sail. Named from resemblance to spectacles.

Q. What are gluts?

A. Pieces of rope spliced into the middle cloth of a sail, fitted with a thimble for buntwhips. Buntwhip is hooked to the glut in furling.

Q. What are gaskets?

A. They are for binding sail to yard in furling. They are classed as harbor and sea gaskets. Harbor gaskets are named from their position on yard as bunt, quarter, and yard-arm gaskets. They are usually made of sword-mat or heavy canvas. The extremity is fitted with a laniard for securing. They are sometimes secured to the sail. The sea gaskets, or furling lines (three on each arm of lower or topsail yards, and one on each light yard arm), are usually of small-sized rope, of sufficient length to take several turns around the yard and sail. These are not securely fastened to yard. They are put around it with a running eye end being bighted up and thrown over forward of the sail. Harbor gaskets should be carefully blacked and lined with duck.

Q. What are back cloths?

A. Triangular pieces of canvas secured to each quarter of topsail yards. They are for convenience in stowing bunt of topsails.

Q. What is meant by the hoist of a sail? The drop of a sail?

A. A term applied to sails whose yards travel up and down masts. The drop of a sail is a term applied to courses, meaning the distance from the head to the foot of the sail.

Q. What are the principal parts of a fore-and-aft sail?

A. The forward corner of the lower edge is the "tack"; the after corner of foot is "clew"; the forward corner of the head is the throat or "nock"; the after corner the "peak" or head; the forward edge the foreleech or "luff"; the after edge the after "leech."

Q. How are fore-and-aft sails made fast to spars and stays?

A. In spankers and trysails, robands rove through eyelets are made fast to travellers in vertical railroad up and down after side of mast and beneath gaff. Straysails or jibs travel by hanks or lacings on the stays. These are secured by robands to eyelet holes in the sail.

Q. What is the "roach" of a sail?

A. Where the foot is hollowed out to prevent chafe on the stays.

Q. What is a goring cloth?

A. Any cloth cut obliquely, as those on a jib or sides of a topsail.

Q. Why are reefbands on some sails not fitted with reef-points?

A. The holes are there but it is desirable to reef them so rarely that when the time comes robands can be used.

Q. Where is the roping placed on sails?

A. On the after side of square sails; on the port side of fore-and-aft sails.

Q. What are the principal parts of an awning?

A. The backbone, sharks-mouth, earings, stops, lacings.

Q. What is the backbone?

A. A rope running fore-and-aft with a thimble in each end for fore-and-aft tackle. The awning is hauled out at the corners by earings and at the sides by steps. It should always be set taut, no wrinkles. Stops and earings well expended.

Q. What is the sharks-mouth?

A. An opening to accommodate the masts and stays. The corners thus formed are the dogs-ears.

STANDING AND RUNNING RIGGING.

Q. What two general classes of rigging are aboard ship?

A. Running and standing rigging. Running rigging is the gear which is used in setting sails or handling the yards, booms, or spars. Standing rigging steadies and secures the masts and spars in place, and gets its name from the fact that it is permanent.

Q. What are the principal pieces of standing rigging and their uses?

A. STAYS—Ropes leading from head of, and supporting, mast from forward.

SHROUDS—Side supports for the masts, leading from masthead to sides of ship.

BACKSTAYS—Lead from head of upper masts, abaft, down to ship's side.

GUYS—Side supports for booms.

BOBSTAYS—Chains which hold bowsprit down. They are secured to the cutwater. As the bowsprit supports the foremast, the fore the mainmast, and the main the mizzenmast, these are the most important pieces of standing rigging in the ship.

BOWSPRIT SHROUDS—The side supports of a bowsprit.

BACK ROPES—Lead from end of Dolphin striker aft to eyebolts in bow.

JUMPERS—Lead downward from ends of whisker booms to hold them down.

JIB MARTINGALE—The downward support of a jibbiim.

JIB GUYS—Side supports of the jibboom. They correspond to shrouds.

FLYING JIB MARTINGALE and GUYS—Same supports for flying jibboom.

PENDANTS—Short heavy ropes over masthead with eye for hooking "burtons."

RATLINES—Small lines hitched across shrouds, to form ladders.

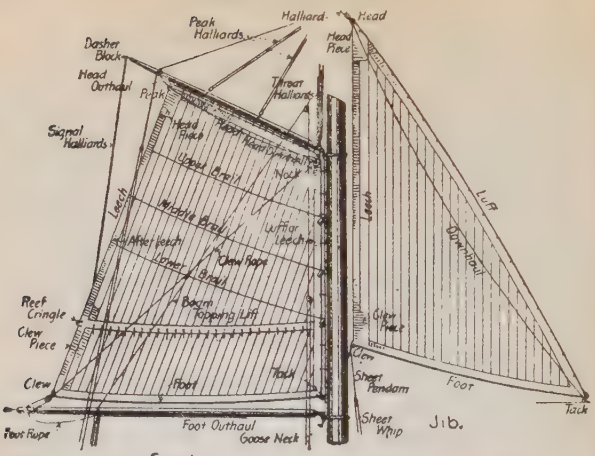
SHEER POLE—An iron rod seized to shrouds just above deadeyes. Used to steady lower rigging and prevent deadeyes from sluing.

SHEER RATLINE—Every fifth ratline. It extends to the backstay.

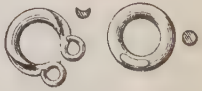
SWIFTER—The forward or after shroud.

Q. Of what material is standing rigging made?

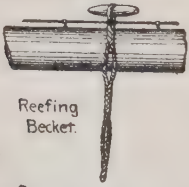
A. Formerly of tarred hemp rope. Now nearly always of wire rope, parcelled and served and tarred to preserve it. Screws are used now in setting up shrouds instead of laniard.



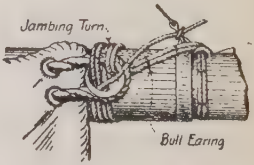
Head Earing Backer.

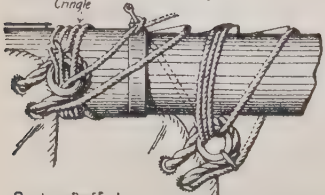


Hank. Driver.



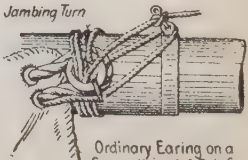
Reefing Becket.





Passing a Reef Earing (Topsail.)

Close Reef passed with the Ordinary Earing



Ordinary Earing on a Course Using Luff Bolt for Hauling-out Turn.

DETAILS OF SAILS AND FITTINGS.

Q. Why has each mast more support sideways and aft than it has forward?

A. Because the force of the wind tends to blow sail forward and to the side and never aft unless caught aback, which is unusual.

Q. How is the standing rigging named?

A. Each piece has the name corresponding to the spar which it supports; *e. g.*, main-topgallant-backstay is the backstay on the main-topgallant-mast, etc.

Q. What are fore-and-aft stays?

A. All stays that lead forward.

Q. What are some of the principal auxiliaries to standing rigging?

A. WYTHE—An iron band on end of jibboom supporting flying jibboom.

GAMMONING—Heavy iron bands which hold the bowsprit down.

FUTTOCK SHROUDS—Iron rods leading from an iron band on lowermast, called futtock band, to an iron plate near toprim called futtock plate. These shrouds take the strain of the topmast shrouds, and keep top from warping.

LANIARDS—Small hemp ropes which connect the deadeyes, hearts, etc., of rigging, used to set up and secure the end of shrouds and stays.

DEADEYE.—A piece of lignum vitæ with holes in it through which are rove the laniards that secure the shrouds.

HEARTS—For reeving the laniard of stays, etc. A heart has but one large hole and several grooves or scores. It is iron bound.

THIMBLE—An iron ring, the outer surface scored so as to receive the eye of a rope when spliced around it. Used in eye splices.

JACKSTAYS—Rods of iron secured along the tops of yards, or elsewhere. Those on tops of yards are used for reefing and bending sail.

FOOTROPE—Rope hanging under yards for men to stand on.

STIRRUPS—Short pieces of rope hanging from yard, supporting the footrope.

FLEMISH HORSE—The short footrope at outer end of yard.

PACIFIC IRONS—Iron fixtures fitted on the extreme end of both fore and main yards and fore and main topsail yards. Support outer end of flemish horse and boom irons.

BOOM IRONS—Metal hoops, or rings, on lower and topsail yards to support studdingsail booms.

PARREL—A rope collar encircling the mast, and attached to the jaws of the yard. It confines yard to mast, but permits vertical motion of yard. The eyes of parrel are connected by parrell lashing.

TRUSS—A heavy iron fixture holding center of lower yard to mast.

SLINGS—A chain going around lower masthead, connected to lower yard by a pelican hook.

JACOB'S LADDER—A ladder with iron or wooden rungs, rope or wire sides.

Q. What are the "eyes" of the rigging?

A. The parts that go over the masthead.

Q. What advantage has wire rigging over hemp?

A. It is neater, lighter, lasts longer, and does not stretch so easily.

Q. What three things are necessary to know about each piece of the running rigging?

A. (1) The object of the rope; that is to say, what it does. (2) Where it belays on deck. (3) How to reeve it.

Q. In reeving gear what must always be watched?

A. To lead it in such a manner as to avoid chafe.

Q. What are the principal pieces of running rigging and their uses?

A. HALLIARDS—To hoist a sail on a mast or stay.

SHEETS—To spread out the foot of a sail. Secured to clews of sail.

TACKS—To haul down the forward clew of a course on the weather side.

BRACES—Secured to ends of yards to swing them around horizontally.

LIFTS—To support the yard-arms and keep them from drooping.

CLEWLINES—To haul up the clews of a sail when shortening sail. On courses they are called "clew garnets" on spanker or trysails, "clew ropes."

BUNTLINES—Haul foot of a sail up to, and forward of, yard.

LEECHLINES—Haul leech of courses up and taut along forward side of yard.

BUNTWHIPS—Haul up bunt of sail when furling.

REEF TACKLES—Haul leeches of sail up under yard-arms when reefing.

BOWLINES—Haul out forward and steady a weather leech to catch wind.

BRAILS—Haul the after leech of spanker or trysail to the mast in furling.

VANGS—Steady after end of gaff when sail is brailed up.
DOWNHAULS—Haul down the heads of fore-and-aft sails.
OUTHAULS—Haul head of spanker or trysail, out to end of gaff. Haul foot of spanker to end of boom.

Q. How does running rigging take its name?

A. It has its own name connected with the name of the sail to which it belongs; e. g., main-topsail sheet, clewline, buntline, etc.

Q. Describe how a piece of gear is rove off.

A. Start with the end of a rope from the coil and follow through every block and leader till secured.

Q. What is the centipede?

A. It is a strong piece of rope extending on top of jibboom, from its head to the bowsprit cap. Through the strands, at intervals of four feet, small pieces of rope are placed. These are called centipede legs and are used to bind the jib down to jibboom in stowing it.

Q. What are topsail tyes?

A. They are wire ropes. The topsail halliards hook in an eye in the end. They lead up through gin blocks below topmast trestle trees, down through tye blocks on yard, then up and around masthead. When the halliards are hoisted they cause the yard to rise.

Q. What are fly blocks?

A. They are the large upper blocks of the topsail halliards. They are steadied aloft by travelling up and down on a jackstay.

Q. What are rolling tackles?

A. They are tackles carried out from the mast to the quarter of a yard horizontally to steady yard when ship is rolling.

Q. What is meant by preventer gear, such as preventer braces, parrels, etc.?

A. It is gear put temporarily in place to assist to take the strain off the regular gear and to replace it in case other gear carries away. It is gotten up and aloft when a storm is expected or when gear is weak.

Q. What are heel ropes?

A. Lines made fast to heels of topgallantmasts, jibboom, and flying-jibboom. They stay the former in sending down. Help rig out the latter.

Q. What is a snorter? Its use?

A. A small rope, the outer end of which is spliced to the iron eye, at the yard-arm of light yards. The inner end is stopped to the slings of yard. The eye of the lift and brace

fit on over the snorter. The tripping line is secured to snorter and when hauled upon from deck the lower lift is pulled off.

Q. What is a tripping line?

A. A small line long enough to reach from the deck to inner end of snorter when yard is crossed. When hauled on, it trips yard and pulls off lift and brace, and guides yard to deck.

Q. What is a timenoguy?

A. A piece of rope placed to support a bight of rigging to prevent chafe—on the main brace for instance.

Q. What are Irish pennants?

A. Rope yarns, or loose ends, hanging about the rigging.

PART THREE

"S–4"

SEAMEN AS INSTRUCTORS

PART THREE.

"S-4."

SEAMEN AS INSTRUCTORS.

A seaman is in direct line for promotion to the rating of a petty officer of the seaman branch. One of the principle duties of a petty officer of any rating is to *instruct* the men under him in the proper performance of their duties. It often happens that an energetic, intelligent and conscientious man, in spite of the fact that he has a clear record, fails to obtain promotion simply because he is not able to get his subordinates to do their work properly, or to give them proper instruction in the right way of going about it. He loses heart and finishes by doing the job himself. A petty officer should be able to direct others in their work and see that they do it properly. While they are still seamen, men should interest themselves in the instruction of the ordinary seamen in professional subjects. By so doing they will find their own knowledge increasing, and will soon develop a facility for training men that will stand them in good stead when they become petty officers. Seamen should be assigned squads of ordinary seamen, and they should be marked in their ability to give proper instruction.

PART THREE

"S–5"

GROUND TACKLE

Note: Also see Part II, "S"

PART THREE.

"S-5."

GROUND TACKLE.

Q. Give type, weight and stowage of all anchors on your ship.

Q. Give length, size, location of shackles and swivels, and method of marking of bower cables on your ship.

Q. What is a solid anchor? A portable anchor?

A. A solid anchor has the shank and arms made in one piece, such as the old-fashioned or Navy type anchor. Portable anchors are made so they may be taken to pieces.

Q. How is the stock of an old-fashioned anchor secured in its place?

A. One end of the stock has a forged steel ball attached; this ball is fixed to the stock. The other end of the stock is bent (for convenience in stowing); to this end is attached a movable forged steel ball. About the middle of the stock is a shoulder. To stock the anchor: Remove the ball from the bent end. Put stock through hole in shank, and push it through until it takes up against its shoulder. Put a washer over the bent end of the stock and shove it up to the shank. Secure a key through a hole in the stock, thus holding the shank between the shoulder of the stock and the washer. Secure the movable ball, and the anchor is ready for letting go.

Q. How is the chain tested for flaws when heaving in?

A. By tapping the links with a hammer to detect flaws.

Q. What is meant by OVERHAULING CABLES? How often is it done?

A. Cable should be overhauled once every three months. Rouse chain up on deck and thoroughly clean it. Carefully examine each shackle, swivel and link. Unshackle every length of chain. Back out all shackle pins. Clean shackle pins and bolts and give them a coat of white lead and tallow. If you find a pin rusted in, you may cut the rust with turpentine, or break the pin. Oil swivels well, and work them until they turn freely without grinding. Verify all marks on the chain and renew them, if necesary. Clean and paint the chain lockers

and the bilges under them. See all drains in chain locker clear of dirt. You may detect flaws in the material by tapping with a hammer; a defective link will fail to give a clear, ringing sound. Replace any defective shackles. Replace any studs that may be missing in links, but *if you find a defective link, the entire shot of chain must be removed.* Remember that the safety of the ship depends on the strength of the cable. The cable is most liable to break in the very heaviest weather just when it is most needed. Therefore you cannot be too careful in overhauling cable.

Q. How are swivels kept lubricated?

A. By placing a mixture of white lead and tallow in the cup.

Q. What is the most frequent accident to the cable that results in the loss of an anchor?

A. A shackle may spring and open out at the end, thus parting the cable. A strain sufficient to produce this may occur when the shackle passes over the wildcat, or while it is lying across the outer lip of the hawsepipe. Sometimes the small pin in the shackle is broken; this, of course, allows the shackle bolt to drop out, resulting in the loss of the anchor. This is all the more reason why each shackle should be carefully examined whenever the cable is hove in.

Q. About How MUCH CABLE IS GIVEN THE ANCHOR under varying conditions of weather?

A. The general rule in fair weather is to give about four or five times as much cable as the depth of the water. In heavy weather this is increased as desirable. A long scope of chain on one anchor is better than the use of two anchors with half as much chain on each.

Q. Why is it desirable to have a long scope of chain on the anchor in heavy weather?

A. The chain hangs in a bight. When a sea or heavy strain comes against the ship the bight straightens, taking the strain gradually and avoiding any sudden jerk on the ground tackle. Also the long scope tends to bury the flukes deeper in the mud, whereas a short scope would cause them to break out and drag.

Q. What is meant by "slipping a cable?"

A. Unshackling a cable, or cutting the lashing at the bitter end, thus allowing the cable to run out and overboard. When cables are slipped, it is usual to buoy them so they may be found and recovered. Slipping the cable is resorted to only in emergencies.

Q. How is a chain bitted?

A. Suppose it is held by stoppers, forward of the bitts. Rouse enough cable up from below to permit a turn to be

thrown over the bitt. Heave to the compressor to prevent the chain from running below. The bight is lifted and dropped into place by a light tackle hooked overhead. The part leading forward from the bitts is underneath and outboard. Bitts have been omitted from late ships as the spare, or sheet, cable is now usually let go from the nearest wildcat, or from a dummy wildcat. (See Part II, "S.")

Q. What is meant by "ranging cable?"

A. When chain is roused up on deck for cleaning, or overhauling, or for other purposes, it is "ranged" on deck in "fakes," for and aft. Care must be taken to see that the part which is to run out first is outboard. If the outboard fake were to run out last, there would be a violent inboard sweep of the bight as the chain tautened out.

Q. What is the method of letting go an old-fashioned anchor?

A. This type of anchor is secured on the billboard. It is let go "stock and fluke" by means of a trigger, which releases both ring stopper and shank painter at once.

Q. How let go a patent anchor?

A. This type of anchor is housed in the hawsepipe. The weight of the anchor is taken up by a pelican hook stopper. In letting go, slack up the friction band of the anchor windlass, pull the locking pin and knock off the link that holds the pelican hook.

Q. What is a FLYING MOOR?

A. When a ship, on reaching her anchorage, lets go one anchor—for example, the port anchor—still keeps headway and veers on port chain to 90 or 120 fathoms, then lets go the starboard anchor and backs her engines. The port chain is then hove in, and starboard chain veered until there is either 45 or 60 fathoms out on each anchor. Then put on mooring swivel.

Q. What is a MOORING SWIVEL?

A. Its object is to prevent cables from fouling when a moored vessel swings at her anchors. It is an ordinary swivel with two links at each end. (See Plate.) The two riding parts of the cables are secured to the forward links of the swivel. The inboard end of one of the cables is shackled to one of the inboard links of the mooring swivel, which is then hove back until mooring swivel is just under the hawsepipe. The cup of the mooring swivel must always point aft.

Q. Tide running ebb, flying moor is made, port anchor is let go first, then starboard, which is the riding chain and which the lee chain?

A. In this case the starboard chain will be the riding chain, the port chain the lee chain.

Q. On which chain is the mooring swivel first secured?

A. Always on the riding chain.

Q. Name in order the steps that must be taken in mooring a battleship (given conditions: tide running ebb, port anchor to be let go first).

A. Let go the port anchor. When 75 fathoms shackle of port chain is in the hawsepipe, let go the starboard anchor. Let both chains run out freely until strain is off them. When the ship has lost headway, heave in port chain until 45 fathom shackle passes the wildcat. At the same time veer on starboard chain until the 45 shackle is abaft controller. Put forward stoppers on both chains and let down starboard controller block. While the starboard chain is held by stopper, disconnect it and put on mooring swivel, cup aft. After swivel is on starboard (riding) chain, take off stoppers and heave out on starboard chain until swivel is just abaft the hawsepipe.

After this stage has been reached, the port (lee) chain must be held over the side sufficiently long to permit of unshackling it and heaving the end around the stem of the ship, in through the starboard (riding) hawsepipe in order to shackle it to the mooring swivel. When this has been done both chains will be secured to mooring swivel. The starboard chain is then veered until the mooring swivel is just under the starboard hawsepipe.

Q. In mooring under the above conditions, what is usually done with the loose end of the port chain that has been unshackled?

A. It is customary to connect it up to the sheet anchor so the latter will be ready for letting go.

Q. Name the gear used in mooring a battleship under the above conditions; give usual size of each piece of gear, and state the particular use of each piece of gear in mooring ship.

A. 1. *Clear hawse pendant;* 1¼-inch open-link chain, fitted with pelican hook. Use; to hold port (lee) chain when disconnected preparatory to hauling it around stem through starboard (riding) hawsepipe and making fast to mooring swivel.

2. *Dip rope;* 1-inch open-link chain, tailed with 3-inch wire rope. Use; to heave port (lee) chain around stem of ship and up through starboard (riding) hawsepipe where end is shackled to lower free link of mooring swivel.

3. *Easing out line;* 5-inch hook rope. Use; hooked to end link of port chain and moused, used as an easing-away line as dip rope is hove around.

4. *Preventer;* 8-inch manila hawser. Use; to take up port (lee) chain in case of failure of clear hawse pendant.

Fig. 1.—Mooring Swivel. Fig. 2.—Carrying out kedge anchor in a boat. Fig. 3.—Carrying out heavy anchor with one boat. Fig. 4.—Same as Fig. 3, except anchor is too heavy to hang at stern. Fig. 5.—Same as Fig. 4, except anchor is so heavy as to require casks to add to buoyancy of boats.

In addition to the above there are deck tackles, straps, chain hooks, jiggers, heaving lines, set of unshackling tools, Jacob's ladder and a boatswain's chair.

Q. What is meant by "clear," "open" and "foul hawse?"

A. If a vessel that is moored heads West—for example—she has an "open" hawse if her starboard anchor is to the North and her port to the South on their respective sides. She can now swing 8 points either way and keep "clear hawse," that is, the cables continue to lead off on their respective sides clear of each other. As soon as the chains begin to cross each other the vessel has a "foul hawse."

Q. What are the successive stages of foul hawse?

A. *Cross in hawse.*—The chains cross each other once, the starboard anchor being on the port bow, and port anchor on starboard bow.

Elbow in hawse.—After putting a cross in hawse, if the ship swings 16 points more in the same direction she puts an "elbow" in the hawse.

Round turn.—16 points more in same direction puts round turn in it.

Round turn and elbow.—The next half-circle after round turn.

Q. How is a hawse cleared when foul?

A. Sometimes a cross or elbow can be cleared by making the ship swing the right way. A round turn, or anything more complicated, can be taken out only by the use of the clear hawse gear.

Q. What is the clear hawse gear?

A. It has been described in the answer to the question on gear used in mooring ship. It consists principally of clear hawse pendant, preventer, dip rope, easing out line.

CARRYING OUT ANCHORS.

Q. What is meant by carrying out an anchor?

A. It is frequently necessary to carry an anchor away from the ship and drop it in order to secure a line to it from the ship, either to moor her, or to obtain a lead for hauling or warping her. This is called carrying out an anchor. It is usually done in a launch.

Q. What general methods are used in carrying out anchors in boats?

A. (1) The simplest way, but only applicable to light anchors, is to hang the anchor from the stern of a launch by a strap secured through ringbolt in sternpost by a toggle and eye.

(2) A heavy anchor may be carried out *under* the stern of a boat by putting casks under quarters, shank horizontal, stock vertical, arms horizontal and held close to keel by line leading over each rail.

(3) Where launch is fitted with trunk and windlass the ring may be hung from the stern, the stock horizontal, and the fluke hove up under the keel by a line leading from one arm up through the trunk to the windlass.

(4) Particularly applicable to patent anchors. Sling anchor under center of boat by strap secured to balance ring and leading up over each rail and secured, by toggle and eye, each part to the other.

(5) Between two boats in tandem.

(6) Between two boats alongside each other.

Q. How is cable, or hawser, carried out with an anchor?

A. If a large amount is carried out, another boat is used; but it may be towed by the one with the anchor. Chain is carried outside of the boat stopped up with strong stops, and before the anchor is let go, enough stops are cut to allow the anchor more than to reach the bottom. If cable is attached to the anchor, the same precaution must be observed. Or if cable is used, it may be laid out like a guesswarp, being paid out as you go, and when only enough remains to reach bottom heave all over before letting go anchor.

Q. How is a warp carried out?

A. Take the end to the bow of the boat and coil enough down for securing when the beach or buoy is reached. Coil the remainder down in the stern. If it is a long warp and a fair wind and tide, pay out from the ship until enough remains to get ashore; then pay from the boat, and on reaching the shore secure the end. If against tide use the tide by taking all the line in the boat, securing ashore first, then paying down to the ship.

PART THREE

"S–6"

THE COMPASS, LOG AND LEAD

Note: See also Part II, "T"

PART THREE.

"S-6."

THE COMPASS, LOG AND LEAD.

Q. What practical test should be made to determine a man's ability to steer?

A. Every seaman should be an excellent steersman; he must be a satisfactory one. To determine his ability to steer he should be required to steer the ship for at least 20 minutes. If this is not practicable, the man should be made to steer a steamer satisfactorily.

Q. Name the various places from which your ship can be steered, and state the methods of steering that may be used at each steering station.

Q. How would you steer the ship if you were at the wheel in the steering gear room?

A. If the compass in the steering gear room were unreliable, the officer of the deck would, by using the steering telegraph or a telephone, keep you informed of how he wanted the rudder, and you would move the wheel so as to obey orders.

Q. If the officer of the deck signalled 10 degrees right rudder how would you move your wheel, and how would you know when the rudder was 10 degrees to the right?

A. You would move your wheel to the right until the rudder indicator showed that the rudder was 10 degrees to the right.

Q. Box the compass by quarter points from West to North.

Q. How many degrees are there in a circle?

A. 360.

Q. How many points are there in the compass?

A. 32.

Q. How many degrees are there in a point?

A. 11¼ degrees. (Divide 360 by 32.)

Q. What is the compass heading West in degrees?

A. 270 degrees.

Q. Southwest?

A. 225 degrees.

Q. Within how many points of the wind can a ship sail?

A. Usually a square-rigged ship will sail within 6 points of the wind.

Q. How many points are required for tacking?

A. Twelve, six on each side.

Q. If a ship heads North on starboard tack, how would she head on the port tack?

A. The wind would be from ENE, hence the ship would head SE on the port tack.

THE HAND LEAD.

Q. If you are sent in the chains during daylight to take soundings, what is the first thing you would do?

A. Secure the end of your line, and see that the line is clear for running.

Q. On entering the chains at night, what would you do in addition to securing the end and seeing the line clear?

A. Measure the distance from your waist to the water's edge.

Q. How determine a man's skill with the HAND LEAD?

A. Send him to the chains and let him take and report soundings. Every seaman must know how to heave the lead and report soundings correctly. (See Part II, "T.") Casts must be taken with the right and the left hands.

THE LOG.

Q. Where is the PATENT LOG usually located when underway?

A. It is secured to an iron outrigger on either side so that it will clear the propellers.

Q. Name the principal parts of the patent log.

A. Rotator, or fly, which is secured to the outboard end of the line. The register, or dial, that registers the speed of the ship in knots and tenths of knots through the water.

Q. What kind of a line is used for the patent log and what is its length?

A. Specially prepared cotton line about 150 fathoms long.

Q. What care should be taken of the patent log?

A. The mechanism should be oiled, the rotator blades protected from bending or other injury, and the line kept free of knots and turns.

Q. What does the CHIP LOG consist of?

A. The log line, the reel on which it is wound, the chip which is weighted on its lower side to make it sit upright in the water,

the long glass of 28 seconds, and the short glass of 14 seconds. The line is attached to the chip by a bridle, two legs of which are secured to the third by a plug and socket.

Q. How is the log line divided?

A. Into distances, called knots, which are subdivided into tenths of a knot. The distances on the line, called knots, are the same portions of a sea knot that 28 seconds is of an hour. Therefore, every knot that runs out while the sand is running through the 28-second glass represents so many real knots per hour that the ship is making.

Q. What is the length of a knot on a log line?

A. 47 feet, 4 inches.

Q. How is a log line marked?

A. Always soak the line in water for several days to get kinks out and to make it shrink. At 15 or 20 fathoms from the chip, mark the "stray line" by a piece of red bunting. From this point measure 47 feet, 4 inches, and mark that point with a piece of fish line with one knot in it. The remaining knots are marked, at intervals of 47 feet, 4 inches, by fish lines with two, three, four, etc., knots according to the distance. Each space between the knots is then divided into five equal parts and marked by a piece of white line. A piece of white line, therefore, marks every two-tenths of a knot.

Q. What is a "stray line?"

A. The line between the chip and the red rag. It is allowed to run out so that the chip will be well clear of the eddies of the ship, and the line will be running out regularly before the measuring begins.

Q. What are the time glasses, and why are they used?

A. They are glasses partly filled with sand, and with a bulb on each end. In the case of the long glass, 28 seconds are required for the sand to run from one end to the other; in the case of the short glass, the time is 14 seconds. As the line is divided into divisions that are the same part of a sea knot as 28 seconds is of an hour, if the chip is hove overboard and does not drag, the line that runs out while the sand is running through the long glass will just represent the speed actually made at that time. The glasses are used because they are more convenient and less liable to error than a watch. If the short glass is used, the reading of the log line must be doubled. The short glass is generally used for speeds of more than 5 or 6 knots in order to avoid running out a large quantity of line.

Q. Using the 14-second glass, 4 knots and 2 pieces of white line are out, how fast is the ship going?

A. Eight and eight-tenths knots.

Q. How is the log hove?

A. Two men hold the reel, and one man holds the time glass, getting all the sand in one end. The quartermaster takes the plug and fits it securely in its socket, gathers a small coil of the line in his hand, and sings out "clear glass." The man with the glass replies (if all the sand is in one bulb), "clear glass." The quartermaster sings out "Stand by," and throws the chip and coil over the lee quarter, clear of everything. When the red rag passes the rail the quartermaster sings out "Turn." The glass holder repeats this word and turns the glass until it is vertical, the sand end on top. He holds it in this position until the sand in the upper bulb has all run out, when he calls "Up." The quartermaster then holds the line and notes the mark nearest the taffrail. If the long glass has been used this mark will give the speed in knots; if the short glass has been used, this mark must be doubled. The quartermaster then gives the line a quick jerk, pulling out the plug so that the chip will drag along the surface of the water, instead of vertically against it. Reel holders reel in the line and secure the reel.

Q. Why is the chip log so rarely used at the present time?

A. Because the speed of the ship can be obtained with greater accuracy and less trouble by the use of the patent log.

Q. What is the current log?

A. The ordinary log hove in the ordinary way from a ship or a boat at anchor. It is used to measure the speed and the direction of the current.

Q. What is the ground log?

A. It is a log used to determine the speed of a ship over the ground. Patent log and ship log give the speed through the water only. By attaching a lead to a log line in place of a chip, and heaving it the usual way, and timing it with a glass, the actual speed over the ground may be determined. Care must be taken to see that there is sufficient stray line to reach the bottom before the glass is turned.

Q. How is a sounding taken by the DEEP-SEA LEAD?

A. The lead is taken to the forecastle and the line passed forward on the weather side, outside of and clear of everything. The men range themselves along the side, each with a small coil of line in his hand. The line is bent to the lead, and the latter is "armed" with tallow. The engines are stopped, and when the ship has nearly lost her way the boatswain's mate of the forecastle division sings out "Watch-ho, watch," and heaves the lead over the side, well clear. Each man along the side holds on to the line until he feels the weight of the lead,

when he sings out, "Watch-ho, watch," and lets go the bight. No one must let go the line until he actually feels the weight of the lead; otherwise it would not be possible to tell when bottom was reached. The man who obtains bottom while the line is in his hands, reads it off as he would a hand-lead line. The line is then carried to a light snatch block, hauled in and the character of the bottom is noted and recorded.

Q. What is the weight of the deep sea lead?

A. From 30 to 100 pounds.

Q. What instrument has replaced the use of the deep sea lead under service conditions at present?

A. The Sir William Thompson Sounding Machine. A brief description of the sounding machine has been given in Part II.

Q. Name the principal parts of the sounding machine.

A. Frame, drum, handles, lead, wire, cylinder, tube and depth recorded.

Q. How take a sounding with the sounding machine?

A. At least two men are required. The quartermaster, or whoever else may be in charge, sees everything in order, the lead armed, the tube in place and the handles shipped. The lead is swung over the stern, the wire leading through the fair lead beside the taffrail. The man at the brake sees that the catch is on the arm, the indicator of the dial at zero; he then takes the brass finger pin and holds it pressed lightly against the wire and waits for orders to make the cast. When the order is given he heaves back the handle, and so allows the weight of the lead to cause the reel to pay out roundly. As soon as he feels the wire slacken he quickly turns the handle in the opposite direction, thus putting on the brake. Then he raises the clamp on the arm and heaves in the wire. The leadsman goes to the taffrail to receive the lead and get it aboard. The tube is then measured for depth and the arming examined.

Q. What precautions are necessary in taking the sounding?

A. 1. If the ship has much way on, in heaving in the lead will drag along the surface; and if care is not exerted it will swing into the stern of the ship just as it leaves the water.

2. Care must be taken to see that the wire is not run out to the bitter end. For this reason the man at the brake should begin to put on brakes at the time the dial shows 250 fathoms so that it will be stopped before the 300 fathom mark is reached, whether bottom is obtained or not.

3. The wire will *break* at a kink under a very slight pull or jerk. Except in case of a kink, it is almost impossible to break the wire in use. Wire will never kink so long as it is taut, and a good leadsman will never allow it to kink. When the lead

touches the bottom the wire will slacken for an instant, but if the brake is applied immediately, it will tauten out without doing damage; if the brake is not applied immediately, the wire is nearly certain to break and the lead will be lost. Whenever a cast is taken at any speed less than 5 knots, it is advisable to manage the brake so as to moderate the speed of the wire according to judgment, allowing the reel to run around at something like 3 turns per second.

NOTE.—For description of the latest type of sounding machine, and the method of rigging it, see Part IV of the Manual, chapter for Chief Quartermasters.

TIDES.

Q. What is a WINDWARD TIDE?
A. When the wind and the tide are in opposite directions.
Q. What is a LEEWARD TIDE?
A. Wind and tide together. Tide is setting to leeward.
Q. What is an EBB TIDE?
A. Tide running out.
Q. What is a FLOOD TIDE?
A. Tide running in.
Q. What is meant by SLACK WATER?
A. Water has no motion due to tide. It usually occurs near the time of either high or low water.
Q. What is meant by a WINDWARD EBB?
A. Tide ebbing, and wind blowing in.
Q. By a LEEWARD EBB?
A. Tide ebbing, and wind also blowing out.
Q. By a WINDWARD FLOOD?
A. Tide setting in and wind blowing out.
Q. By a LEEWARD FLOOD?
A. Tide and wind both setting in.
Q. What is SPRING TIDE?
A. The tides just after the full or new moon. The range of the tide is then greatest. The high water is higher, and the low water lower than at any other time.
Q. What are NEAP TIDES?
A. They occur near first and third quarters. The range is least. The high water is not so high, nor is the low water so low as at other times during the moon's phases.

PART THREE

"S–7"

INFANTRY

Note: See also Part II, "V"

PART THREE.

"S-7."

INFANTRY.

Q. What does a squad consist of?

A. A petty officer and 8 men.

Q. What is the first thing that men must be taught in regard to the necessity of remaining with their squads?

A. Always remain with your squad. In case your own squad is broken up, or you are unavoidably separated from it, place yourself under the nearest leader, and remain with his squad as if it was the one to which you originally belonged.

The squad executes the halt, rests, facings, steps, marchings and the manual of arms as explained in the School of the Recruit. (See Part II, "V.")

Q. How Size the Squad?

A. The instructor arranges the men, according to height, in column at facing distance, tallest man in front, and commands:

1. *In two ranks form squad,* 2. March, 3. Front.

At the command *march,* the first man faces to the left; the knots are marked, at intervals of 47 feet, 4 inches, by fish at a distance of 36 inches. The other men close in quick time, and form alternately in front and rear rank, as explained for the first two, each man facing to the left, upon arriving at his proper place, then dressing to the right, preserving a light touch of elbows.

When all men have formed, the instructor commands: Front. Each man turns his head and eyes to the front.

After the squad has been sized, the men are cautioned to take the same relative positions whenever the squad is formed thereafter.

Q. How Form the Squad?

A. The instructor places himself 3 paces in front of the point where he wishes the center to form, and commands: Fall In.

The men assemble at *attention* in their proper places, in double rank, arms at the *order.*

The instructor then commands: Count Off.

At this command, all except the right file execute *eyes right*, and beginning on the right, the men in each rank count *one, two, three, four;* each man turns his head and eyes to the front as he counts.

The instructor next commands: 1. *Port,* 2. ARMS, 3. *Open,* 4. CHAMBER, 5. *Close,* 6. CHAMBER, 7. *Order,* 8. ARMS.

In case the examination reveals the presence of cartridges, the man removes them without further instruction.

Q. How make the ALIGNMENT of the squad?

A. The instructor establishes one or more files as a base, and commands: 1. *Right* (*Left*), 2. DRESS, 3. FRONT.

At the second command, the men turn the head and eyes slightly to the right, and at the same time move forward or backward, halting a little in rear of the line; each man then moves up in rapid succession, taking steps of two or three inches, places his elbow *lightly* against that of the man on his right and brings his shoulders and eyes in line with those of the men on his right. The rear rank man conforms to the movement of his file leader. At the third command, the men stand fast and look to the front.

Q. How preserve the alignment when marching?

A. By the command GUIDE RIGHT (LEFT).

The men preserve their intervals from the side of the guide, yielding to pressure from that side and resisting pressure from the opposite direction; they recover alignment by slightly lengthening or shortening the step; the rear rank men cover their file leaders at 36 inches.

In double rank, the front-rank man on the right, or designated flank, conducts the march; when marching faced to the flank, the leading man of the front rank is the guide.

Q. HOW TAKE INTERVALS?

A. Suppose the squad in line at a halt:

1. *To the right* (*left*) (*so many paces*) *take intervals,*
2. MARCH, 3. *Squad,* 4. HALT.

At the first command, the rear rank steps back to 4 paces distance from the front rank; at the command *march,* all face to the right and the leading man of each rank steps off; the other men step off in succession so as to follow the preceding man at the designated interval.

At the command *halt,* given when all have their intervals, all halt and face to the front.

When not specified in the command, the interval will be 4 paces.

This is the formation used for conducting setting-up drill at morning quarters.

Q. How ASSEMBLE?

A. 1. *To the right (left) assemble,* 2. MARCH.

The front-rank man on the right stands fast, the rear-rank man on the right closes to 36 inches. The other men face to the right, close by the shortest line, and face to the front.

Q. How TAKE DISTANCES?

A. Being in line at a halt, and having counted off; 1. *Front (so many paces) take distance,* 2. MARCH, 3. *Squad,* 4. HALT.

1. At the command *march,* number one of the front rank moves straight to the front; numbers 2, 3 and 4 of the front rank, and numbers 1, 2, 3 and 4 of the rear rank move, in the order named, straight to the front, each stepping off so as to follow the preceding man at the designated distance. The command *halt* is given when all have their distances.

In case more than one squad is in line, each squad executes the movement as above, and each rank of numbers guides on its right number.

When not specified in the command, the distance will be 4 paces.

Q. How ASSEMBLE?

A. 1. *Assemble,* 2. MARCH.

Number 1 of the front rank stands fast; the other numbers move forward to their proper places in line.

Q. How ASSEMBLE TO THE REAR?

A. 1. *To the rear, assemble,* 2. MARCH.

Number 4, rear rank, stands fast; the other numbers face about at the first command, and at the command *march,* move to the rear, taking their proper places in ranks, and then facing to the front.

Q. What is done at the command,

1. *Right (Left) oblique,* 2. MARCH?

A. The squad being correctly aligned, at the command *march,* each man steps off in a direction 45 degrees to the right of his original front. He preserves his relative position, keeping his shoulders parallel to those of the guide (the man on the right front of the line or column), and so regulates his steps that the ranks remain parallel to their original front.

At the command *halt,* the men halt, faced to the front.

To resume the original direction, 1. *Forward,* 2. MARCH.

The men half face to the left in marching and then move straight to the front.

If at a *half step* or *mark time* while obliquing, the oblique march is resumed by the commands: 1. *Oblique,* 2. MARCH.

Q. How does the squad turn on a moving pivot?

A. Being in line, the command is given:

1. *Right (left) turn,* 2. MARCH.

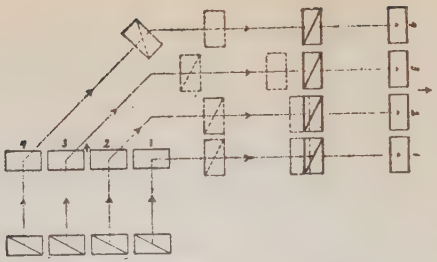


Plate 1.
Squad right turn.

The movement is executed by each rank successively and on the same ground. At the second command, the pivot man of the front rank faces to the right as in marching and takes the half step; the other men of the rank oblique to the right until opposite their places in line, then execute a second right oblique and take the half step on arriving abreast of the pivot man. All glance towards the marching flank while at half step and take the full step without command as the last man arrives on the line.

Right (Left) half turn is executed in a similar manner. The pivot man makes a half change of direction to the right, and the other men make quarter changes in obliquing.

Q. How does the squad turn on a fixed pivot?

A. Being in line, to turn and march:

1. *Squad right (left),* 2. MARCH.

At the second command, the right-flank man in the front rank faces to the right in marching and marks time; the other front-rank men oblique to the right, place themselves abreast of the pivot, and mark time. In the rear rank, the third man from the right, followed in column by the second and the first, moves straight to the front until in rear of his front-rank man when all face to the right in marching and mark time; the other number of the rear rank moves straight to the front paces and places himself abreast of the man on his right. Men on the new line glance toward the marching flank while marking time, and, as the last man arrives on the line, both ranks execute *forward march* without command.

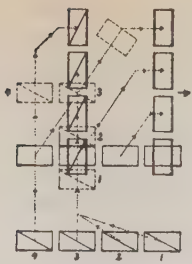


Plate 2.
Squad right.

NOTE.—The plate shows the movements of the rear-rank men; numbers 3 and 4 march straight to the front, while 2 and 1 incline sharply to the left and follow behind 3 in the order named.

Being in line, to turn and halt.

1. *Squad right (left)*, 2. MARCH, 3. *Squad*, 4. HALT.

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph except that all men, on arriving on the new line, mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

Q. How TURN ABOUT AND MARCH?

A. Being in line, to turn about and march:

1. *Squad right (left) about*, 2. MARCH.

At the second command, the front rank twice executes *squad right*, beginning the second *squad right* when the man on the marching flank has arrived abreast of the rank. In the rear rank, the third man from the right, followed by the second and first in column, moves straight to the front until on the prolongation of the line to be occupied by the rear rank; changes direction to the right; moves in the new direction until in rear of his front-rank man, when all face to the right in marching, mark time, and glance toward the marching flank. The fourth man marches on the left of the third to his new position; as he arrives on the line, both ranks execute *forward march* without command.

Q. How TURN ABOUT AND HALT?

A. 1. *Squad right (left) about*, 2. MARCH, 3. *Squad*, 4. HALT.

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph, except that all men, on arriving on the new line, mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

Q. What is meant by COLUMN OF SQUADS?

A. A formation in which the squads are placed one behind another.

Q. Being in column of squads, how reduce the front?

A. 1. *Squads right (left),* 2. MARCH, 3. *By the left (right) flank,* 4. MARCH.

Execute *squads right* as described under the instructions for turning on a fixed pivot. Then march by the flank as explained in Part II, "V."

The front may be still further reduced, the rear-rank men closing on their front-rank men. See Plate 3.

Q. Marching by the flank in two ranks, how change direction?

A. Executed by the same commands and in the same manner as a column of squads.

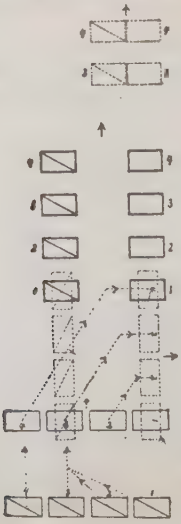


Plate 3.
To reduce the front in column or squad.
1. Squads right. 2. By the left flank. 3. Ranks closed.

Q. Marching by the flank in two ranks, how form column of squads?

A. 1. *By the right (left) flank, squads left (right),* 2. MARCH. At the command *march,* line is formed, and then, *without pause,* column of squads is formed.

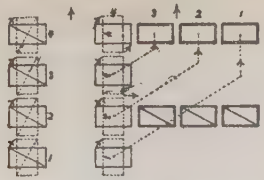


Plate 4.
Marching by the flank in two ranks to form column of squads.
Right flank, squads left.

Q. How MARCH IN SINGLE FILE?

A. Marching faced to the flank, in two ranks, to reduce the front: 1. *Single file,* 2. MARCH.

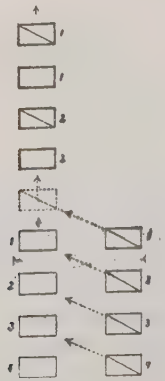


Plate 5.
Single file from double rank.
Marching by the flank.

Each rear-rank man places himself in front, or in rear, of his file leader, according as the right or the left is in front, the

men in rear marking time and following at facing distance, thus forming in "single file."

The single file changes direction and inclines by each man making the *face in marching* on the same ground as the leading man, all maintaining the *full step*.

Q. How march in double rank from single file?

A. Being in single file, marching or at a halt: 1. *Form double rank,* 2. MARCH.

Each rear-rank man places himself abreast his file-leader, and both ranks close to facing distance, the men in rear increasing the pace if necessary until closed.

Q. How FORM SINGLE RANK from double rank?

A. Being in line, in double rank, at a halt:

1. *Single rank,* 2. MARCH, 3. FRONT.

At the second command the file leader on the right stands fast and his rear-rank man steps into the front rank on the right of the squad, and No. 2 rear-rank moves straight to the front. The other men execute *eyes right,* move quickly to the

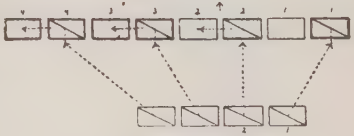


Plate 6.
Form single rank at a halt.

left by the *side step,* and the rear-rank men place themselves on the line to the right of their file leaders, as soon as there is an interval, and preserve a light touch of elbows.

If marching, the movement is executed upon the right file leader as a base in the same general manner as in the deployment of a squad as skirmishers; the third command is *guide right.*

Q. How FORM DOUBLE RANK from single rank?

A. Being in line, in single rank, at a halt: 1. *Double rank,* 2. MARCH, 3. FRONT.

The original rear-rank men move quickly 36 inches to the rear, and both ranks then face and close in, forming in double rank on the original right file leader as a base.

If marching, the movement is executed upon the original right file leader as a base, and in the same general manner

as in assembling a squad of skirmishers; the third command, in this case, is *guide right.*

In case the original formation was in single rank. to form double rank, after the squad has counted off: the movement is executed in the same manner whether at a halt or if marching, the odd numbers dropping to the rear to form the rear rank, and the command *count off* is again given when the double rank is formed.

Q. How many squads in a COMPANY?

A. Normally 6 squads and 2 sections, three squads to a section.

Q. What are the posts of petty officers in a company in line?

A. See Plate 7.

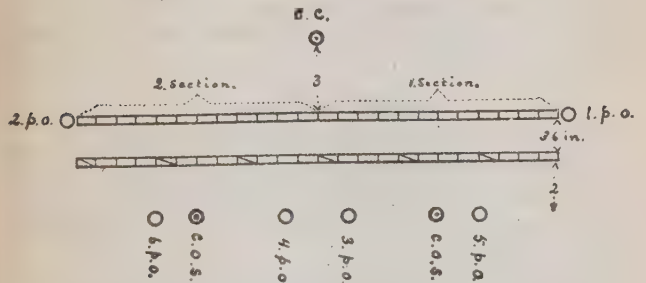


Plate 7.
"Company in line."

Q. Being in line at a halt, what do you do when the command OPEN RANKS is given?

A. The command is: 1. *Open ranks,* 2. MARCH, 3. FRONT. At the first command, the right and left guides (1st and 2d P. O.'s) step 3 paces to the rear to mark the new alignment of the rear rank. At the command *march,* the front rank dresses to the right, the rear rank steps backward, halts a little in rear of the line established by the guides, and then dresses to the right on that line. At the command *front.* the guides resume their posts in the front rank, men in ranks turn head and eyes to the front.

Q. Who are the FILE CLOSERS?

A. Such officers and petty officers of a company as are posted in rear of the line. All men posted in the line of file closers.

Q. Being at open ranks, what do you do at the command 1. *Close ranks,* 2. MARCH?

A. Front rank stands fast; rear rank closes to 36 inches, each man covering his file leader.

The School of the Squad has been given in detail because it may happen that a seaman will be called upon to act as petty officer in charge of a squad. Consequently, it is advisable for him to learn the exact details prescribed for handling a squad both in closed and extended order. It has been pointed out in Part II that the details of company and battalion drill will best be learned at actual drill, once the details of the School of the Recruit and the School of the Squad are understood.

Q. Where are the complete drill regulations to be found?

A. In "The Landing-Force and Small-Arm Instructions, United States Navy."

EXTENDED ORDER.

Q. What is the final object in all military training?

A. SUCCESS IN BATTLE.

Q. What is the purpose of extended order drill?

A. To teach the *mechanism* of deployment, of the firings, and, in general, of the use of troops in battle. Hence extended order drill is absolutely practical.

Q. What is meant by deployment?

A. The act of changing from close order to extended order.

Q. What is the largest unit that executes extended order drill?

A. The company.

Extended order drill is executed *at ease.*

Q. What BUGLE SIGNALS may be used off the battle field, when not likely to convey information to the enemy?

A. *Attention.* Troops are brought to attention.

Attention to orders. Troops fix their attention.

Forward, march. Used also to execute quick time from double time.

Double time, march.

To the rear, march.

Halt.

Assemble march.

Q. What bugle calls may be used *on the battle field?*

A. *Fix bayonets.*

Charge.

Assemble, march.

Q. What bugle calls are used on the battle field in exceptional cases?

A. *Commence firing.*

Cease firing.

Q. What WHISTLE SIGNALS are ordinarily used in battle in place of any of the above calls?

A. *Attention to orders.* A *short blast* of the whistle. Used when it is necessary to fix the attention of the troops. Also, when the firing line is firing, each squad leader suspends firing and fixes his attention at a *short blast* of his section leader's whistle. The section leader's subsequent commands are repeated and enforced by the squad leader. If a squad leader's attention is attracted by a whistle other than that of his section leader's, or if there are no orders or commands to convey to the squad, he resumes firing at once.

Suspend firing. A long blast of the whistle.

Q. What ARM SIGNALS are used by officers on the firing line?

A. In making signals, either arm may be used. The following are the prescribed signals:

Forward, march. Carry hand to shoulder. Straighten arm, holding it horizontally, and point in direction of march. Also used to come to quick time from double time.

Halt. Carry hand to shoulder. Thrust hand upward and hold arm vertically.

Double time, march. Carry hand to shoulder. Rapidly thrust hand upward the full extent of the arm several times.

Squads right, march. Raise the arm laterally until horizontal. Carry it to a vertical position above the head and swing it several times between the vertical and horizontal positions.

Squads left, march. Raise the arm laterally until horizontal. Carry it downward to the side and swing it several times between the downward and horizontal positions.

Squads right about, march (if in close order) or *To the rear, march* (if in skirmish line). Extend arm vertically above the head. Carry it laterally downward to the side and swing it several times between the vertical and downward positions.

Change direction or *Column right* (*left*), *march.* The hand on the side toward which the change of direction is to be made is carried across the body to the opposite shoulder, forearm horizontal. Then swing it in a horizontal plane, arm extended, pointing in the new direction.

As skirmishers, march. Raise both arms laterally until they are horizontal.

As skirmishers, guide center, march. Raise both arms laterally until horizontal. Swing both upward together until vertical and return to the horizontal. Repeat several times.

As skirmishers, guide right (left), march. Raise both arms laterally until horizontal. Hold the arm on the side of the guide steadily in the horizontal position. Swing the other arm upward until vertical and return it to the horizontal. Repeat several times.

Assemble, march. Raise the arm vertically to its full extent and describe horizontal circles.

Range, or *Change elevation.* To announce *range,* extend the arm toward the leaders or men for whom the signal is intended, fist closed. By opening and closing the fist, expose thumb and fingers to a number equal to the hundreds of yards. To add fifty yards describe a short horizontal line with forefinger. *To change elevation,* indicate the *amount of increase* or *decrease* by figures as above. Point upward to indicate increase and downward to indicate decrease.

Suspend firing. Raise and hold the forearm steadily in a horizontal position in front of the forehead, palm of the hand to the front.

Cease firing. Raise the forearm as in *suspend firing,* and swing it up and down several times in front of the face.

Section. Extend the arm horizontally toward the chief of section. Describe small circles with the hand.

Squad. Extend the arm horizontally toward the chief of section. Swing the hand up and down from the wrist.

Rush. Same as *double time.*

THE SQUAD IN EXTENDED ORDER.

Q. How DEPLOY AS SKIRMISHERS?

A. Being in any formation, assembled:

1. As *skirmishers,* 2. MARCH.

The petty officer places himself in front of the squad, if not already there. Moving at a run, the men place themselves on a line 3 paces in rear of the P. O. at half-pace intervals. No. 2 front-rank directly in rear of the P. O., No. 1 on his right, Nos. 3 and 4 on his left, rear-rank men on the right of their file leaders, extra men on the left of No. 4; all then conform to the P. O.'s gait.

When the squad is acting alone, skirmish line is similarly formed on No. 2 of the front rank, who stands fast or continues the march, as the case may be; the P. O. places himself in front of the squad when advancing, and in rear when halted.

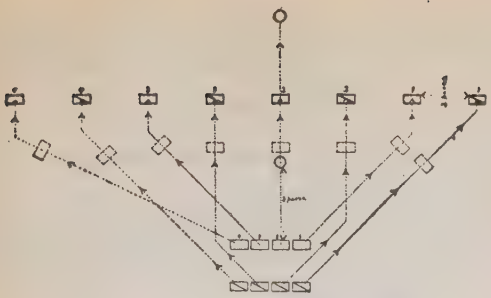


Plate 8.
To deploy the squad, forward.

When deployed as skirmishers the men march at ease, pieces at the trail unless otherwise ordered. No. 2 front rank is the guide.

The P. O. is the squad leader. His position is in front or in rear of the squad as circumstances require. He may place himself on the line if it is necessary for him to use his rifle.

Q. What is the normal interval between skirmishers?

A. One-half pace. (A foot and a quarter.)

Q. How INCREASE OR DIMINISH INTERVALS?

A. If assembled, and it is desired to deploy at greater than the normal interval; or if deployed, and it is desired to increase or decrease the interval:

1. *As skirmishers* (*so many*) *paces*, 2. MARCH.

Intervals are taken at the indicated number of paces. If already deployed, the men move by the flank, toward or away from the guide.

Q. How is the squad ASSEMBLED?

A. Being deployed, 1. *Assemble*, 2. MARCH. The men move toward the P. O. and form in their proper places.

If the P. O. continues to advance, the men move in double time, form and follow him.

The assembly while marching to the rear is not executed.

Q. What command is given when it is desired for the squad TO FOLLOW THE PETTY OFFICER?

A. Being assembled, or deployed, to march the squad without unnecessary commands, the P. O. places himself in front of the squad and commands: FOLLOW ME.

If in line, or skirmish line, No. 2 of the front rank follows in the trace of the P. O. at about 3 paces; the other men conform to the movements of No. 2, guiding on him and maintaining their relative positions.

If in column, the head of the column follows the P. O.

THE COMPANY IN EXTENDED ORDER.

Q. How deploy the company?

A. Being in line, to form skirmish line to the front:

1. *As skirmishers, guide right* (*left* or *center*), 2. MARCH.

If marching, the P. O. of the base squad moves straight to the front. When that squad has advanced the desired distance the company commander commands,

1. *Company,* 2. HALT.

If the guide be *right* (*left*), the other P. O.'s move to the *left* (*right*) front, and, in succession from the base, place their squads on the line. If the guide be *center,* the other P. O.'s move to the *right* or *left* front, according as they are on the right or left of the center squad, and in succession from the center squad place their squads on the line.

If at a halt, the base squad is deployed without advancing; the other squads are conducted to their proper places by the flank. Interior squads are moved when the squads more distant from the base have gained comfortable marching distance.

Q. How form skirmish line to the front from column of squads?

A. 1. *As skirmishers, guide right (left* or *center),* 2. MARCH

If marching, the P. O. of the base squad deploys it and moves straight to the front. *If at a halt,* he deploys his squad without advancing. If the guide be *right, (left),* the other P. O.'s move to the *left* (*right*) *front,* and in succession, from the base, place their squads on the line. If the guide be center. the P. O.'s in front of the center squad move to the right (if at a halt, to the right rear); the P O.'s in the rear of the center squad move to the left front, and each, in succession from the base, places his squad on the line.

The company moving by the flank or in column of files is deployed by the same commands and in like manner.

The company in line or column of squads may be deployed in an oblique direction by the same commands. The company commander points out the desired direction. The P. O. of the base squad moves in the direction indicated. The other P. O.'s conform.

To form skirmish line to the flank, or to the rear, the line or column of squads is turned by squads to the flank, or to the rear, and then deployed as described.

Q. How is the Company Assembled?

A. The company commander takes his post in front of, or designates, the squad on which the company is to assemble, and commands: 1. *Assemble,* 2. MARCH.

If in skirmish line, the men move promptly toward the designated point, and the company is reformed in line.

Sections may be assembled by the command:

1. *Sections, assemble,* 2. MARCH.

Executed by each section as described for the company.

THE USE OF COVER.

Q. What instruction should a recruit be given in the use of cover?

A. He must be taught that in taking advantage of natural cover he must be able to fire easily and effectively upon the enemy. If advancing on an enemy he must do so steadily and as rapidly as possible. He must control himself as much as possible while firing and while advancing.

To teach him to fire easily and effectively, at the same time concealing himself from the view of the enemy, he is practiced in simulated firing in the prone, sitting, kneeling and crouching positions from behind hillocks, trees, heaps of earth, or rocks, from depressions, gullies, ditches, doorways or windows. He is taught to fire around the right side of his concealment whenever possible, or when this is not possible, to rise enough to fire over the top of his concealment.

The evil of remaining too long in one place, however good the concealment, should be explained. He should be taught to advance from cover to cover, selecting cover in advance before leaving his concealment.

He should be taught that when fired on while acting independently, he should drop to the ground, seek cover and then try to locate his enemy.

PART THREE

"S–8"

ARTILLERY

Note: See also Part II, "W"

PART THREE.

"S-8."

ARTILLERY.

Q. How many petty officers and men in a section of artillery?

A. 3 petty officers and 24 men, numbered from 1 to 24.

Q. What numbers constitute the crew of the gun?

A. 1 to 8 inclusive. The first petty officer has charge of the crew.

Q. What numbers constitute the support and what are the general duties of the support?

A. 9 to 16. The second petty officer has charge of the support. The support handles the limber and supplies ammunition to the piece.

Q. What numbers constitute the reserve?

A. 17 to 24. Third petty officer has charge of the reserve. Their duty is to assist at limber or piece as required, or they may act as infantry support on the march.

Q. At the command FALL IN AT THE DRAG, what are the stations of crew, support and reserve, (1) With limber, (2) Without limber?

A. Answer and diagram given in Part II, "W."

1. Stations, with limber.

Number.	Station.
1 & 2	Check ropes of limber.
3 & 4	Check ropes of piece.
5 & 6	Upper crossbar of limber.
7 & 8	Lower crossbar of limber.
9 & 10	First toggle, right drag.
11 & 12	Second toggle, right drag.
13 & 14	Third toggle, right drag.
15 & 16	End toggle of right drag.
17 & 18	First toggle, left drag.
19 & 20	Second toggle, left drag.
21 & 22	Third toggle, left drag.
23 & 24	End toggle of left drag.

2. Stations, without limber.

Number.	Station.
1 & 2	Guide ropes of piece.
3 & 4	Check ropes in rear of piece.
5 & 6	First toggle, right drag.
7 & 8	Second toggle, right drag.
9 & 10	Third toggle, right drag.
11 & 12	Fourth toggle, right drag.
13 & 14	End toggle, right drag.
15 & 16	First toggle, left drag.
17 & 18	Second toggle, left drag.
19 & 20	Third toggle, left drag.
21 & 22	Fourth toggle, left drag.
23 & 24	End toggle, left drag.

Q. What is done at the command FALL IN, SECTION TO THE FRONT?

A. Fall in, the odd-numbered men in front rank, even-numbered men in rear rank, numbers 1 and 2 on the right, 23 and 24 on the left, distance between ranks, 36 inches.

Q. Suppose the drag is manned, what is done at the command: 1. *Section to the front,* 2. MARCH?

A. *At first command:*

Men drop toggles, riflemen unsling arms, all hands close on right and left leaders at *double time,* pieces at the trail, 3 and 4 step ahead of 1 and 2, 7 and 8, 5 and 6, 3 and 4, 1 and 2 close on the right drag leaders in this order.

At second command:

Left leaders change direction to the left, followed by other members in regular order. When 17 and 18 (or 15 and 16, without limber) change direction to the left, they are followed by the right drag leaders, and so on to 1 and 2, who bring up the rear.

The chief of section halts the section and faces it to the right.

Q. The section being to the front, what is done at the command, 1. *Man the drag,* 2. MARCH?

A. At the first command entire section faces to the right. At the second command 1 and 2 change direction to the right in *double time,* along the right drag. They are followed by the other numbers up to and including the right leaders. 17 and 18 (or 15 and 16, without limber) change direction to the right along the left drag, and are followed by the remaining numbers, all slinging arms on the march. Each man halts at his station, faces to the front, and picks up the toggles.

Q. How prepare the piece for action?

A. The command is: 1. *In battery,* 2. MARCH.

(1) *With limber.*

At the first command:

1 and 2 unhook trail of piece from limber, 3 and 4 assisting. 1 calls "All clear" when trail is unhooked.

5 and 6 place rifles clear of piece, take left ammunition boxes from piece, place them one pace to left and rear of trail, hinges to the front.

7 and 8 take right ammunition boxes from piece and place them on limber.

1 P. O. takes post to right and rear of trail, and superintends working of piece.

2 P. O. goes at double time to a position 20 paces in rear of piece to mark position of limber.

3 P. O. places himself on left of 24.

At the second command:

3 P. O. conducts limber in double time to the rear.

2 P. O., when limber is in position, commands 1. HALT, 2. CLOSE UP, and then places himself on the right of the right leader. All hands drop drags, except 9 and 10, who coil them down in two coils, end toggles on top, in the rear of the cross-bar and span, which 9 unhooks from limber. The support and reserve, except 9 and 10, close in double time upon the right and left leaders, unslinging arms.

The 2 P. O. leads the support, inclining slightly to the left, then column right, halts and faces it to the right, about 10 paces in rear of limber.

The 3 P. O. leads reserve, inclining slightly to the left, at double time, 6 paces to rear of support, then column right and halts it and faces it to the right.

7 and 8 prop up tongue of limber, place ammunition boxes taken from piece, hinges to front, 2 paces in front of limber and take station behind them, kneeling, after placing rifles to one side.

9 and 10, when drags are coiled down, take station at upper bar of limber.

2 P. O., two paces to left of limber, superintends supply of ammunition to piece.

3 P. O. is two paces in rear of center of reserve.

(2) *Without limber* (modifications).

At the first command:

All hands drop drags, unsling arms and close on leaders in double time.

7 and 8 close in rear of support and reserve, with right ammunition boxes.

9 and 10 coil down drags six paces in rear of trail.

At the second command:

3 P. O. leads reserve and support in column to the rear, inclining slightly to the left.

2 P. O., when 15 and 16 have advanced 4 paces beyond him, commands, 1. *Support,* 2. *Column right,* 3. MARCH. 4. HALT. 5. *Right,* 6. FACE.

3 P. O. takes reserves 6 paces to rear of support, then gives command as above.

7 and 8 place ammunition boxes in the position established by the 2 P. O., who takes post 2 paces in rear of 7 and 8. 9 and 10, when drags are coiled down, take stations on the right of the support.

Q. When the three-inch field piece is prepared for action, what are the stations of the crew?

A. 1. Rear of trailbar.
2. Right of breech.
3. Left of breech.
4. One pace to right of trailbar.
5. In front of boxes, near piece, ready to pass ammunition.
6. Kneels behind the boxes, near piece.
7 and 8. Kneel behind their boxes in rear, ready to pass ammunition to the piece.

Q. Give special duties in the service of the piece.

A. 1 commands: Take lanyard from tool box; inspects chamber and bore, and directs latter to be sponged, if necessary.

2 removes pin with right hand, opens breech, wipes out chamber with oiled rag, if necessary; inspects plug and lock, sees all clear of dust and dirt, then closes breech; tests elevating gear and levels piece.

3 unhooks bucket and places it two paces to the left of the carriage in line with axle; take down sponge, uncaps it, places sponge-head on bucket with staff to rear; puts on the left brake.

4 takes down trailbar and inserts it in socket on the trail; puts on the right brake.

5 in front of ammunition boxes, near piece, to pass charges to 3. Also assists 4 to adjust trail in training, and to bed the spade.

If piece is used without limber, 2 also unbolts trailwheel.

Q. Give duties at command LOAD.

A. 2 opens breech and closes it after the insertion of the charge.

3 receives charge from 5 or 6, places it in gun, attends elevating and training wheels, if on left of breech.

4 adjusts trail and beds spade.

5 passes ammunition to 3; assists 4 to adjust trail and bed the spade; assists 6 to adjust fuses.

6 in charge of ammunition supply; adjusts fuses; closes lid of box after issue of ammunition.

2 hooks lanyard when passed up by 1.

Q. Why is it necessary to adjust fuses?

A. Because SHRAPNEL is used with the 3-inch field piece. The fuse is a time fuse placed in the nose of the shell. The shrapnel should be set to burst about 50 yards in front of the target.

Q. What is done after the gun is loaded?

A. The objective and range are designated.

1 steps back to the full length of the lanyard, sees the piece trained laterally, then kneels on the right knee with eye ranging over sights.

2 (or 3) adjusts sights, then elevating gear, if on right of breech.

3 at training and elevating gear, if on left of breech. Then change position of bucket and sponge, if necessary.

4 and 5 attend at trail bar and guide ropes for lateral train.

6 changes the position of boxes, keeping them in position to the left and rear of piece.

3 and 4 see the brakes on.

After training laterally, the spade should be bedded as deeply as possible by 4 and 5.

Q. What is done at the command READY?

A. 2 steps one pace to the right.

4 steps one pace to the right.

3 and 5 one pace to the left.

Q. What is done at the command FIRE?

A. 1 cocks the piece and pulls the lanyard.

Q. What is done after firing?

A. If there should be any recoil—that is, if spade and brakes fail to hold the piece in position—the crew will run the piece forward to its former position.

After firing, 2 opens breech smartly, leaving lanyard hooked and loose over lever.

3 withdraws empty case and places it on the ground to his left and turns to 5 for new charge, which is passed up at once from box by 6.

When a box is exhausted, 6 cries "Shell"; 7 and 8 then bring up a full box from the rear and remove the empty box.

Q. What is done at the command CEASE FIRING?

A. If the gun is loaded, 2 unhooks lanyard, then carefully opens the breech, 3 removes the charge and passes it to 5 or 6 to be replaced in box.

5 and 6 collect the empty cases and place them in an *empty box*, never in a partly filled box.

Q. Being in battery, what is done at the command SECURE?

A. Each number returns or secures the articles which he removed or cast loose. 9 and 10 place drag ropes on top of ammunition boxes. The 2 P. O. assembles support and takes it to the front to a position 6 paces in rear of trail, center opposite trail. 3 P. O. obliques to the left and places reserve on left of support. The crew fall in on right of support, facing to the front. P. O.'s take position as in section to the front.

Q. When is the command "Secure" used?

A. When pieces are to be left in position on the field, the section falling out. It is then the assembly formation for muster. The pieces are manned, in battery, at the command 1. *Stations*, 2. MARCH. Or they may be prepared for the road by the command 1. *Man the drag*, 2. MARCH. In either case commands are executed in double time.

Q. Being in battery, what is done at the command: 1. *Man the drag*, 2. MARCH?

A. (1) *With the limber.*

At the first command:

Support and reserve rise, sling arms and assemble.

9 and 10 hook on the span and lead out drags, then man lower cross-bar of limber and secure prop.

7 and 8 place the ammunition boxes on the limber, then keep them in place while they man the wheel-drags.

2 and 3 P. O.'s face support and reserve to the right and conduct them in double time along drags; the men halt at their stations and man toggles, facing toward limber.

At the piece, 1 lowers sight, replaces lanyard in tool box and secures trail-wheel for hooking on.

2 puts in lever pin, if used, and secures trail-wheel for hooking on.

3 secures bucket and sponge and takes off left brake.

4 secures trail bar and takes off right brake.

5 and 6 place left ammunition boxes on piece.

At the second command:

7 and 8, 9 and 10, assisted if necessary by 11 and 12, move the limber by hand to the piece.

3 and 4 lift trail.

1 and 2 hook on.

7 and 8 place right boxes, from the limber, on the piece.

5, 6, 7, 8 take stations on the crossbars of limber.

9, 10, 11 and 12 man the right drag.

P. O.'s take their posts.

Without limber (modifications).

At the first command:

9 and 10, after leading out the drags, take their stations at the drag.

7 and 8 prepare the ammunition boxes for going to the front.

2 and 3 P. O.'s do not conduct support and reserve to the drags until the second command.

1 and 2, after finishing other duties, bolt the trail-wheel.

4 secures trail bar, if it is not to be kept shipped in trail socket.

At the second command:

2 P. O. conducts the support, in double time, column left, to its station at the drag.

3 P. O. follows with the reserve in a similar manner.

7 and 8 carry ammunition boxes to the front and place them on the piece.

Crew take their stations for manning the drags and guide ropes.

P. O.'s take their posts.

Q. In changing direction, how does the section make the turn?

A. The command is: 1. *Right (or Left) turn (or half turn)*, 2. MARCH.

Without limber. Drag leaders turn sharply to the right (or left) in *double time,* keeping the drags taut. Other numbers so regulate their step as to complete the movement with the leaders. 1 and 2 raise the trail until the trail-wheel is well clear of the ground. 3 and 4 haul the rear drags sharply to the left (or right).

With limber. The leaders turn to the right (or left) in *double time,* gaining ground so that the piece turns in a circle of 3 yards radius. The other men so regulate their step as to complete the movement in the same time as the leaders.

If the command *Halt* is not given upon the completion of the turn, the men take up the march in the new direction in *quick time,* if they were moving in quick time before the turn.

Q. What are the instructions for THE SERVICE OF THE PIECE IN BOATS, in the case (1) The 3-inch field gun, (2) The Benet-Mercié and Colt Automatic Guns, (3) The 1-Pounder Rapid Fire Gun?

A. The following instructions are taken from "The Landing-Force and Small-Arm Instructions:"

SERVICE OF THE PIECE IN BOATS.

3-Inch R. F. G.

(1) If the piece is to be used on a boat-mount, and then transported to the beach for service on shore, it is dismounted on board ship, lowered into the boat and placed upon the boat-mount by the *crew*, assisted by such members of the section as the means at hand render necessary. The carriage and limber are then dismounted and stowed aft in the boat, or the limber may go in a second boat, as is most convenient for handling the oars and for the service of the piece. If a large sailing launch is used, it may be practicable to place carriage and limber therein without dismounting them, using modifications of the methods which follow to get all ashore.

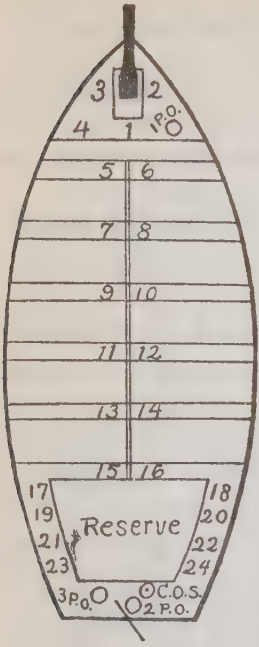


Plate 1.

(2) The oars are manned by the *support* as follows: 15 the port stroke oar, 16 the starboard stroke oar, and so on from aft, the forward oars being manned by the higher numbers of the *crew* as necessary.

(3) The 1 P. O. takes his station forward, and has charge of the service of the piece.

(4) The 2 P. O. acts as coxswain.

(5) The 3 P. O. with the *reserve*, if present for landing, act as riflemen in the stern sheets. Or, with heavy boats, the *reserve* may be used to double bank the thwarts.

Special duties at the command: MAN THE PIECE.

5 and 6, 7 and 8, if at the oars, trail oars; 1, in rear of the gun, superintends; prepares sight for use; receives lanyard from tool-box; 2, right of breech, opens breech; inspects bore, chamber and mechanism; closes breech; tests elevating-gear;

tends training-clamps, if on the right of mount. 3, left of breech, sees sponge and bucket at hand; tends training and elevating-gear if on left of mount; 5 and 6, ammunition passers.

6 at ammunition boxes, to pass ammunition to 4 and 5; sees that box-lid works freely. The ammunition boxes will be placed where best adapted to the ready service of the gun.

LOAD:

2 opens breech, and closes it after the insertion of charge; hooks lanyard for the first fire.

3 inserts charge after breech is opened by 2.

4 and 5, alternately pass charges to 3.

6 takes charge of box, cuts the fuse, and passes to 4 or 5, and when box near gun is nearly empty, cries: SHELL.

7 and 8 then bring forward a full box from the stern sheets, and remove empty box.

The objective and range are designated.

2 tends elevating-gear, and assists in training by pushing breech to port.

3 tends training-clamp, and assists in training by pushing breech to starboard.

The helm is used if necessary.

READY.—1 gives the command: 2 (or 3) sets up the training clamp.

FIRE.—1 gives the command, and fires, when sights are on the target.

CEASE FIRING:

2 unhooks lanyard; opens breech carefully.

3 withdraws charge and passes it to 4 or 5.

4 or 5 passes charge to 6, who replaces it in box. If necessary, the gun should be sponged from the breech.

THE BENET-MERCIE AND COLT AUTOMATIC GUNS.

These guns, if on boat-mounts until the beach is reached, then to be landed as part of landing-force, will be worked as directed in the shore drills, the *crews*, *support*, and *reserve*, if used, taking boat stations as described for the 3-inch R. F. G.

DRILL OF 1-PDR. R. F. GUN (AS MOUNTED IN A BOAT).

(1) The crew of a 1-pdr. R. F. gun, mounted in a boat, will consist of five men, and will have the same titles and stations as the crews of 1-pdr. R. F. guns on board ship.

(2) The pointers should be selected from the pointers of regular secondary guns. The other members of the gun's crew need not be members of regular secondary guns on board ship.

(3) When the boat is called away, the first and second pointers and the plugman will provide the gun and saddle; the loader provides the boat cage-mount.

(4) The method of providing the gun and mount, and mounting the same in the boat, must necessarily be left to the direction of the officer in charge of boat, and will be different in different ships. If possible, other men should be detailed to assist the gun's crew in mounting the gun in the boat.

(5) Plugman also provides and examines reserve box containing accessories; bristle bore-sponge handle (bristle bore-sponge is in the reserve box).

(6) Loader provides bucket containing fresh water; one hand-swab, one gun-swab, wet; and ammunition.

(7) Shellman provides ammunition.

(8) The amount of ammunition to be provided will be regulated by the commanding officer and will depend upon the requirements at the time. In the absence of orders one box will be supplied.

COMMANDS (FOR WORKING GUN IN BOAT).

(9) CAST LOOSE AND PROVIDE; LOAD; (designating object and range); COMMENCE FIRING; CEASE FIRING; UNLOAD; SECURE.

CAST LOOSE AND PROVIDE.

(10) *First pointer* removes gun-cover (if on); sees tompion out, tests breech-mechanism; sees gun in working order; and examines bore. When ready takes station at shoulder-piece, after reporting to boat officer.

(11) *Second pointer* removes sight-cover; places sight; and sees all in working order.

(12) *Plugman* sees in place the reserve-box; bristle bore-sponge and handle; takes station at breech, operating lever.

(13) *Loader* places bucket containing fresh water and hand-swab to rear and clear of the gun; places gun-swab under the breech of the gun; takes station on left of gun at the breech.

(14) *Shellman* places box of ammunition in rear of gun and takes station at the ammunition.

(15) The duties of the crew at the commands for the service of the piece are the same as at the 1-pdr. R. F. guns mounted on board ship.

Q. How DISEMBARK THE PIECE?

A. The following is from "The Landing Force and Small Arm Instructions:"

TO DISEMBARK.

3-Inch R. F. G.

(1) If there is much surf, or the landing has been found, by previous reconnaissance, to be difficult, the following method may be employed:

(2) A suitable spar, about twelve feet long, must be provided for transporting the gun from the boat to the shore. Two grommets are fitted to the spar with which to toggle it to the gun, one forward of the recoil-cylinder, the other abaft. The grommets should be firmly fixed in position on the spar in order to prevent any longitudinal motion. In securing the spar to the gun, the toggles must be twisted tight. If the surf be heavy, or the landing especially difficult, extra lashings should be passed around spar and gun.

(3) In the event of a regular transporting-spar not being provided, a boat's mast may be used in its place, and the gun lashed to the mast by means of the halliards or sheets, or other gear at hand.

On reaching the shore; LAND THE PIECE.

(1) 1, 2, 3, 4 secure the transporting-spar to the gun.
1 removes the sight and places it in tool-box.
2 sees that the lever-pin is in.
3 and 4 unkey the cap-squares.

(2) The *reserve* will deposit their rifles in the stern sheets, then pass forward, jump over the bows, and man the forward end of the transporting-spar. 1, 2, 3, 4, 11, 12 in the boat, man the after end of spar, 3 and 4 raise the cap-squares. All the men on the spar lift the gun clear of mount, passing it forward carefully over the bow, then the inner end of spar is rested on the gunwale, attended by 7 and 8, while 1, 2, 3, 4, 11, 12 jump overboard, and again man the rear end of spar, carrying the gun to the beach. 5, 6, 7, 8 carry the wheels ashore. 13, 14, 15, 16 raise the carriage from the stern sheets, and get it over the gunwale in the most convenient manner, then carry it to the position of the gun, where the carriage is assembled and the gun mounted. 5, 6, 7, 8, 13, 14, 15, 16 return to the boat for ammunition boxes, and dragropes, and the *support* and *reserve* return for their rifles, sling arms, and the dragropes are manned, or the piece placed *in battery* according to circumstances.

(3) If there should be much surf, or a lateral current, an anchor should be gotten out astern immediately on striking the beach, in order to hold the boat "bows on" to the shore.

(4) If the gun is to be landed, with no intention of using it in the boat, it will be found more convenient to secure the transporting-spar to the gun on board ship, and whip both together into the boat, securing the gun amidships, fore-and-aft, between the oarsmen, spar on top; the carriage, wheels, and boxes being stowed in the stern sheets.

When the limber is used with 3-inch R. F. G. it may be stowed in the boat and handled like the carriage. In landing, the carriage follows the gun out of the boat; then the *support* and *reserve* return for the limber and ammunition boxes. Gun, carriage, and limber may be transported to shore in a sailing launch, towed by a steamer; the gun amidships, for and aft, carriage and limber dismounted and stowed aft, while the men of the section man thwarts amidships. If the gun is to be mounted in a cutter, *crew* and *support* manning the oars, it will be well to transport limber in a second boat with the *reserve*.

(5) If the sea is smooth, the landing easy and protected, and it is necessary to get the pieces quickly on shore and into action, the following method is preferable: Provide four planks ten feet long, about one foot wide and two inches thick, fitted with two-inch ledges or combings on either side. Two or these may be placed fore and aft in the boat, the width of the tread of piece, with the forward ends blocked up in the bows to the height of the gunwale; or, the planks may be blocked up when the shore is reached. Land the gun and carriage intact, except ammunition boxes, muzzle forward, at the after ends of the tracks or skids, and secure in place. The limber may be placed abaft of the gun, or transported in another boat. Boats transporting guns will usually be towed nearly to the beach. Beach the boat bows on; place the second two planks as continuations of those in the boat to the shore, securing the inner ends by lashings to the rowlock pins, if a launch; or to the thwarts, if a cutter. Get the gun along the skids and over the bows muzzle first, then ease out with one drag, hooked to the trail. A short plank, or spar, placed across the skids, first inboard, then across those leading ashore, just forward of the trail-wheel, and held in place by a man on either side, will take the weight of the trail and slide down, following the gun.

(6) If the boat is narrow, and the stem would take the axle and prevent the gun going over the bows easily, or there would be difficulty in securing the shore skids to the gunwale forward; land the gun, muzzle aft, limber forward of it; place the boat skids with after ends blocked up to the height of the stern sheets; back the boat in, holding or anchoring the boat,

stern on to the beach; place the shore skids over the stern, and proceed as before, getting the gun ashore.

(7) A modification of this method may be used with the boat well listed broadside on to the beach, the gun and carriage being skidded bodily ashore upon the planks provided.

Q. What is the MINIMUM AMOUNT OF AMMUNITION supplied for use of the gun when landing is contemplated?

A. *Three-inch field gun.* Filled ammunition box (32 rounds).
One-pounder R. F. Filled ammunition box (60 rounds).
Benet-Mercié or Colt, 1000 rounds.
Rifle. 100 rounds for each rifle.
Pistol. 48 rounds for each pistol.

PART THREE

"S–9"

SMALL ARMS

Note: See also Part II, "X"

PART THREE.

"S-9."

SMALL ARMS.

(By Captain William C. Harllee, U. S. Marine Corps.)
Compiled from Firing Regulations for Small Arms, U. S. Navy, 1916. Chapter III. COURSES AND COMPETITIONS.

THE KINDS OF FIRE DESCRIBED.
SLOW FIRE.

Q. When is the target marked in slow fire?
A. After each shot.
Q. How are hits made on the wrong target scored?
A. They are scored as misses.
Q. In what courses may the officer in charge place a time limit in slow fire?
A. In team competitions.
Q. What time limit may he place?
A. Not less than an average of one minute per shot per target for the remaining shots.
Q. What value may he assign to shots not fired within the time limit?
A. Zero.
Q. After pulling the target, what does the marker in the butts do before running it up?
A. He puts the spotter in the new shot hole, and then pastes up the hole from which he has removed the spotter.
Q. When a bull's-eye has been made, which side of the spotter shows?
A. The white side.
Q. When the shot is disked, where is the disk placed?
A. The center of the disk is placed over the spotter.
Q. How is the richochet hit indicated?
A. By waving the marking disk across the target and back.
Q. Before signalling a miss, or when a request for remarking comes from the firing line, what does the marker do?
A. He calls the officer or petty officer in charge to inspect the target.

RAPID FIRE.

Q. How long is the target exposed for five shots in rapid fire in rifle fire and in pistol fire?

A. Thirty seconds in rifle fire and fifteen seconds in pistol fire.

Q. When the commands, "Ready on the right; Ready on the left" are given, what does the firer do?

A. He unlocks his piece.

Q. If a firer is not ready, what does he do?

A. He sings out: "Not ready on number ——."

Q. What does he say if he is ready?

A. Nothing; he remains silent.

Q. When is the command "Stand By" given?

A. When the "ready in the butts" signal appears.

Q. What generally is the cause of a miss-fire?

A. Failure to close the bolt completely.

Q. What generally is the cause of a jam?

A. Failure to draw the bolt fully back in reloading.

Q. How are unfired shots counted when the failure to fire is due to the fault of the firer alone?

A. Unfired shots count as misses.

Q. How are miss-fires tested?

A. By having some one in charge make another attempt to fire the cartridge.

Q. What is done in case there are more than five hits on a target?

A. The score is not marked or scored, and the firer is allowed another string.

Q. When are delayed strings fired, and why?

A. After the regular strings are finished, so that all men will be firing in the same position during the regular sequence.

Q. How is the "ready in the butts" signal given?

A. By displaying a red disk over the designated target.

Q. How is the "stand by" signal given in the butts to the firing line?

A. By withdrawing the "ready in the butts" signal.

Q. What signals may replace the commands "Stand By," "Up," and "Down?"

A. Two blasts of the whistle, or strokes of the gong for "Stand By" and one for "Up," or "Down."

Q. About how much time is given between "Stand By" and "Up," or "Down?"

A. About five seconds.

Q. What does a marker wait for before shoving up his target to be marked?

A. For the arrival of the supervisor of his block.

Q. With which target does the supervisor begin?

A. With the target with the smallest number.

Q. In what order are the hits disked?

A. First the fives, then the fours, then the threes, then the twos and finally the misses.

Q. When are the shot holes pasted?

A. After they are disked.

Q. As soon as the target is pasted, what does the marker do?

A. Half masts the target.

Q. How is the target half masted?

A. It is run half way up, so that the bull's eye is at the height of the marker's head, or when there is a target on both front and rear carriers, place them both at the same height.

Q. Before the "ready in the butts" signal is given, what should the supervisors do?

A. Inspect the targets to see that the shot holes are carefully pasted.

Q. Spotters not being used in rapid fire, what care must be taken to indicate to the firer the location of his hits?

A. Place the center of the disk accurately over the shot hole.

Q. What is the practice called when the targets are operated without being fired on?

A. Dummy practice.

Q. In case use is made of targets that cannot be made to disappear, how may the rapid fire begin and end?

A. By commands or signals.

Q. When use is made of a target with an electrical device to signal the hits, what should also be done?

A. The current should be turned on and off at the proper times.

SKIRMISH.

Q. How long are the targets exposed at each range during skirmish?

A. Thirty seconds.

Q. How long do they remain down before the next exposure?

A. One minute and thirty seconds.

Q. How do the skirmishers advance from range to range?

A. At double time.

Q. In what position are the firers when they refill magazines and reload?

A. In the position from which they fired. Under cover.

Q. When are the sights set for the next range?

A. Not until after arriving at that range, and after the commands for setting the sights are given.

Q. Where are the coaches in skirmish?

A. They accompany the skirmishers.

Q. How many rounds of ammunition are issued to each skirmisher?

A. Twenty.

Q. In preparing for a run, after the command "Fill Magazines; Load and Lock" are given, what command is given to make sure that each firer understands which target he is to fire upon?

A. "Call Off."

Q. Give the commands which follow the command "Halt" at 300 yards before the target appears.

A. "Kneel. 300 yards. Windage ——. Set your sights. Unlock pieces. Five rounds when the targets appear."

Q. When are the commands "Fill magazines; Load and Lock" given?

A. When the targets disappear.

Q. When are the commands "Forward, double time; March" given?

A. When all the rifles appear to be loaded and locked.

Q. What commands are given as soon as the firing is finished at 200 yards?

A. "Port Arms; Open Chambers. Leave the chambers open."

Q. What is then done with the skirmishers?

A. They are marched to the rear of the starting point.

Q. When the scores are taken in the butts, what is done?

A. They should be communicated to the firing line as soon as possible, preferably by telephone.

Q. What is done on the firing line when the scores are received from the butts?

A. The scores are bulletined.

Q. What is done when there are more than 20 hits on the skirmish target?

A. The run is void, and must be repeated.

Q. As the score-taker counts the hits, what does he do to prevent their being counted again?

A. He places a small circle around each hit.

Q. When the targets are pasted and half masted, what does the supervisor do?

A. He inspects the targets to see that the holes are carefully pasted.

CHANGING POSITIONS FIRE.

Q. How long is the target exposed for each shot?

A. Five seconds.

Q. How long is it before the next exposure?

A. Five seconds.

Q. How many exposures are made before the target is marked?

A. Five.

Q. What is the sequence of positions for the firer?

A. Prone; kneeling; squatting; kneeling; prone.

Q. How many shots are fired in each position during a string?

A. One.

Q. As soon as the target disappears, what command is given on the firing line?

A. The command for the next position.

Q. When may a firer change position?

A. As soon as he fires.

Q. What may the officer in charge do if a firer fires in the wrong position?

A. He may deducts five points from the score.

Q. On ranges where it is impossible to have changing positions fire on account of having to use devices, as a safety precaution, to hold rifles, what may be substituted for changing positions fire?

A. Rapid fire.

FIRING AT RANGES LONGER THAN THE PRESCRIBED RANGE AUTHORIZED.

Q. What ranges may be substituted for the prescribed range in any course except in the skirmish?

A. Any range longer than the prescribed range.

TIES.

Q. In individual competitions when the aggregate score of two competitors is a tie, how is the tie decided?

A. By the total score of the ranking class fire.

Q. If each of the total scores were also a tie, how would the prizes then be awarded?

A. They would be equally divided among those whose scores were a tie.

Q. In team competitions, how are ties in the team aggregate score decided?

A. By the highest team total score at the ranking class of fire.

Q. If each of the team total scores were also a tie, how would the tie be decided?

A. By the highest individual score at the ranking class of fire.

Q. Name the order of rank of the four different kinds of fire in all courses except the sharpshooter's course.

A. 1. Changing positions fire.
2. Skirmish.
3. Rapid Fire.
4. Slow Fire.

NOTE.—They therefore rank in the inverse order in which they are fired.

Q. What is the highest ranking class of fire in the sharpshooter's course?

A. Skirmish.

Q. What is the lowest class?

A. Slow and rapid fire at 200 yards.

INDIVIDUAL PRIZES.

Q. If twenty-four men should fire a course, how many prizes would be awarded?

A. Three.

Q. In the qualification courses—marksman, sharpshooter, and expert rifleman—what else is required before a man may be awarded a prize?

A. He must also make a qualifying score.

NOTE.—Prizes are not awarded to all men who qualify, but only to one man in eight, two men in sixteen, etc., adding one prize for each eight competitors.

Q. Except when detachments composed of men from several divisions are sent to distant ranges, what is the rule as to what men compete together?

A. Men compete only with men from their own division.

Q. Mention three ways in which 24 men from the same division could be arranged into classes for prizes.

A. All in one class with three prizes; or three separate classes of 8 men, with one prize in each class; or into a class of 16 men, with two prizes, and a class of 8 men with one prize.

Q. What is the rule in regard to men who are not present together when the courses are fired?

A. Men who have not fired the entire course together will not be included in the same class for prizes.

Q. When should the announcement of the award of prizes be made?

A. Before the firing party is dismissed.

Q. When should the prizes be paid?

A. As soon as possible after the day's firing is completed.

MARKSMAN COURSE.

Q. What officers and men fire the marksman course?

A. Officers who have never qualified as marksmen, and men who have not qualified as marksmen during their current enlistment.

Q. How often may those who fail to qualify fire the course, and compete for prize?

A. Any number of times, until qualification is attained.

Q. At what range is the marksman course fired?

A. At 200 yards.

Q. What kind of fire does the course include?

A. Slow, rapid, and changing positions fire.

Q. Name the positions and number of shots in each position in slow and rapid fire.

A. Five shots in each; prone, kneeling, squatting, and standing.

Q. How many strings of changing positions fire?

A. Four.

Q. How many shots are fired in the entire course?

A. Sixty (a bandoleer).

Q. What is the aggregate score necessary to qualify, and how else may qualification be attained?

A. Two hundred and ten, or if the whole course is fired, and the aggregate score is less than 210, by a total score in changing positions fire of 70.

Q. What men are forbidden to compete for prizes in the marksman course?

A. Those who have qualified as marksman or higher during current enlistment.

Q. What is the value of a prize in the marksman course?

A. $1.00.

SHARPSHOOTER COURSE.

Q. By whom is the sharpshooter course fired?

A. Those who have qualified as marksmen, and no higher.

Q. How often may men who fail to qualify fire the course, and compete for prizes?

A. Any number of times, until qualification is attained.

Q. What is the rule in regard to touching the parapet or post rest?

A. The arm, hand or rifle must touch the parapet or post.

Q. At what ranges does firing take place in the sharp shooter's course? Name positions at each range.

A. 200, standing; 300, kneeling; 400, sitting; 500, prone.

Q. What are the kinds of fire in the sharpshooter's course?

A. Slow, rapid and skirmish.

Q. How many shots in each kind of fire at each range?

A. Five.

Q. How much ammunition is required for the course?

A. One bandoleer, or 60 rounds.

Q. What is the aggregate score necessary to qualify, and how else may qualification be attained?

A. 210, or if the whole course is fired, and the aggregate score is less than 210, by a total score in skirmish of 70.

NOTE.—If, for example, it were convenient to fire the slow and rapid fire at 400 yards, the firing in the sitting position could be fired at 500 yards. The rules also provide that when ranges are not provided with the proper rests, the firing can be held without the rest.

Q. If firing points say at 200, 300 and 500 yards can be secured for slow fire on a separate range from that on which the skirmish is fired, in what order are the different ranges fired?

A. In any order.

Q. What men are eligible to compete for prizes in the sharpshooter course?

A. Only men who during their current enlistment have qualified as marksman and no higher.

Q. What is the value of a prize in the sharpshooter course?

A. $2.00.

Q. When using a parapet rest, on which knee do men kneel?

A. Either or both knees.

Q What advantage does kneeling on the left knee give?

A. It gives a rest for both elbows. The left forearm rests on the parapet and the right elbow may be rested on the right knee.

Q. What must you remember when reloading in the prone position with rifle resting on the parapet?

A. Raise the right elbow well above the ground.

NOTES ON WIND.

Q. What is the o'clock of a wind blowing directly towards the target?

A. 6 o'clock.

Q. From what direction does a 9 o'clock wind come?

A. From the left.

Q. Winds from about 3 or 9 o'clock are called what?

A. Cross winds.

Q. What are fish tail winds?

A. Winds from about 6 or 12 o'clock.

Q. How much does the wind affect a bullet at 200 yards?

A. Very little.

Q. At longer ranges, what are the most favorable directions of wind?

A. Cross winds.

Q. Why is firing more difficult in a fish tail wind than in a cross wind?

A. Because the slightest change in direction of winds of about six or twelve o'clock causes great difference in lateral deviation, while changes in direction of cross winds causes very little differences.

ZERO OF THE RIFLE.

Q. What is meant by saying that a rifle has a zero of one quarter right?

A. It means that if fired in conditions which called for no windage, that rifle would require one quarter right.

Q. With a rifle whose zero is one quarter left and conditions that call for one-half left, where set the windgauge?

A. At ¾ left.

Q. If the zero is ¼ left, and the conditions call for ½ right, where set the windgauge?

A. ¼ right.

Q. The conditions call for ¾ left, but the rifle requires that the windgauge be set at 1¼ left, what is its zero?

A. ½ left.

Q. The conditions require ¾ left, but the windgauge to be set at ¼ left, what is its zero?

A. ½ right.

THE WINDAGE RULE.

Q. What is the windage rule for calculating the amount of windage required for a 3 or 9 o'clock wind?

A. *Range times velocity divided by 10 gives the number of quarter points for a 3 or 9 o'clock wind.*

Q. How much windage do winds about one hour from 3 or 9 o'clock require?

A. Very little less than 3 or 9 o'clock winds require.

Q. How much windage do winds about one hour from 6 or 12 o'clock require?

A. About half as much as 3 or 9 o'clock winds require.

Q. What windage is required at 500 yards for an 8 mile wind from 3 o'clock?

A. 4 quarters right.

Q. At 500 yards, 7 miles from eight o'clock?

A. 3 quarters left.

Q. At 500 yards, 12 miles at 7 o'clock?

A. 3 quarters left.

Q. At 500 yards, 9 miles at 4 o'clock?

A. 2 quarters, or ½ right.

NOTE.—In calculating windage by this rule, fractions of quarters are disregarded.

Q. At 600 yards, 8 miles at 3 o'clock?

A. 5 quarters right.

Q. At 300 yards, 8 miles at 9 o'clock?

A. 2 quarters left.

Q. What is the best thing a beginner can do in regard to finding out the windage?

A. Ask an experienced rifleman.

THE QUARTER POINT RULE FOR CHANGING WINDAGE.

Q. How much does changing the windage ¼ of a point move the bullet at the target?

A. One inch for every 100 yards of range.

Q. At 1000 yards, ¼ point changes the point of hit how much?

A. 10 inches.

Q. At 500 yards, ½ point?

A. 10 inches?

Q. At 200 yards, 1 point?

A. 8 inches.

THE SQUARE RULE FOR CHANGING ELEVATION.

Q. When firing at any range, changing the sights in elevation 100 yards gives how many inches change on the target?

A. The square of the number of hundred yards in the range.

NOTE.—To square a number, multiply it by itself. Thus the square of 4 is 4 times 4, equals 16.

Q. At 400 yards, changing the elevation 100 yards gives what change on the target?

A. 16 inches.

Q. At 800 yards, changing 50 yards?

A. 32 inches.

Q. At 600 yards, changing 25 yards?

A. 9 inches.

Q. At 600 yards, changing 75 yards?

A. 27 inches.

Q. What care should be taken in deciding upon the amount of correction to be made?

A. Favor the smaller amount.

Q. When shots strike too high or too low, or to the right or left, what should the firer do instead of changing the point of aim?

A. Hold in the same place and change the point of hit by changing the sights.

Q. Refer, in the Navy Small Arms Regulations, to the scale showing the effect of changing sight at 500 yards and tell what changes are required for a 2 at 12 o'clock.

A. Lower elevation 100 yards.

Q. A 4 at 9 o'clock?

A. Move ½ point to the right.

Q. What changes in both windage and elevation are required for a 4 at 7 o'clock?

A. Raise elevation 50 yards. Move windage ½ point to the right.

Q. A 3 at 10 o'clock?

A. Lower elevation 50 yards. Move windage one point to the right.

Remember the size of the target and the bull's-eye, and especially the nine inch rule. Refer to the target without any scale on the back of the cover of the firing regulations, and remembering the square rule and the quarter point rule, tell what changes are required for the following hits when the range is 600 yards!

Q. A 4 at 6 o'clock. A. Up 25.

Q. A 3 at 3 o'clock. A. Left ¾.
Q. A 3 at 7 o'clock. A. Up 50; right ½.
Q. A 2 at 1 o'clock. A. Down 75; left ¾.
Q. How many quarter points wide is the bull's-eye at 500 yards?
A. 4 quarters (1 point).
Q. At 200 yards?
A. 10 quarters (2½ points).
Q. How many quarter points wide is the whole target at 600 yards?
A. 12 quarters (3 points).
Q. How many quarter points from the edge of the target to center of bull's-eye at 500 yards?
A. About 7 quarters (1¾ points).
Q. How many yards in range from top to bottom of the target at 500 yards?
A. About 300 yards.
Q. At 600 yards?
A. About 200 yards.
Q. At 1000 yards?
A. About 75 yards.

EXPERT RIFLEMAN COURSE.

Q. Who fires the expert rifleman course?
A. Officers and men who have qualified as sharpshooter, also those who have, in previous years, qualified as expert riflemen.
Q. How often in each year may sharpshooters and expert riflemen fire the course and compete for prize?
A. Any number of times until either qualification or re-qualification is attained.
Q. After qualiying or re-qualifying, in case of transfer, or assignment to a different division, what may be done?
A. The course may again be fired during the year until re-qualification is again attained.
Q. At what range is the expert rifleman course fired?
A. At 500 yards.
Q. In what other respect does the expert rifleman course differ from the marksman course?
A. Where the marksman course has firing in the standing position, the expert rifleman course prescribes the sitting position.

Q. What men are eligible to compete for prizes in the expert rifleman course?

A. Sharpshooters who have not qualified as expert riflemen, and expert riflemen who have not qualified or re-qualified during the year. When an expert rifleman is transferred to a different division, he is again eligible to compete during the year.

Q. What is the value of a prize in the expert rifleman course?

A. $3.00.

THE MICROMETER, OR VERNIER.

Q. What are the smallest readings on the micrometer called?

A. Minutes.

Q. Changing the elevation one minute gives how much change on the target?

A. One inch for every 100 yards of range—the same as ¼ point of windage.

Q. At 500 yards about how many minutes change in elevation is required to change hits from the bottom of the target to the center of the bull's-eye?

A. About 7 minutes.

WEATHER CONDITIONS.

Q. What are heat waves called by riflemen?

A. Mirage.

Q. What other weather condition affects elevations at mid and long ranges?

A. Lights.

Q. What condition affects elevations slightly at long range?

A. Strong head or tail winds.

Q. In shifting or fish tail winds, how do experienced riflemen estimate the changes in windage?

A. By watching the mirage.

Q. What is needed for watching the mirage?

A. A telescope placed on a rest.

Q. How does mirage affect elevations?

A. Mirage requires higher elevation.

Q. When the mirage does not travel to either right or left, but appears to rise or "boil," what should a rifleman do?

A. Wait for it to take a movement to right or left.

Q. If you are shooting in a dull light and the sun comes out, where would your shots then strike?

A. Low and to the right or left, in the opposite direction from the sun.

Q. How should your sights be changed to correct for the light when the sun comes out?

A. Raise the elevation, and take the windage towards the sun.

Q. About how much change in elevation and in windage is required to correct for change in light?

A. About 25 yards in elevation and from ¼ to ½ point in windage.

Q. What is the best range and condition for finding the zero of a rifle?

A. 500 yards; when the sun is not shining bright.

FINDING THE TARGET.

Q. At mid and long ranges when the target has been missed, how much change in elevation should be made from shot to shot in order to find the target?

A. 50 yards. (At long ranges a greater change is liable to jump the target.)

Q. What precaution should be taken in regard to windage in finding the target?

A. Be sure that it is set on the correct side.

MACHINE GUN COURSE.

Q. How many times may each officer or man fire the machine gun course?

A. Once per year while attached to each division.

Q. At what range is the course fired?

A. Any range.

Q. How many shots is the record course?

A. Sixty.

Q. How many extra preliminary shots may be fired?

A. Not over five.

Q. What is done in the butts in regard to the score?

A. It should be communicated at once to the firing line where it is bulletined.

Q. What men only are counted in classes for competitions?

A. The men who fire the gun.

Q. What is the value of a prize in the machine gun course?

A. $1.00.

Q. Where and how is a machine gun secured on a range when it is not in use?

A. On the firing line with the muzzle elevated and pointed to the front.

Q. What precaution is to be observed in regard to passing near the gun?

A. Never pass in front of the muzzle of the gun no matter whether it is loaded or unloaded.

Q. What care is taken to prevent the gun from being handled when not in use?

A. A reliable man must always be stationed with the gun.

Q. What precaution must be taken in regard to the Colt Automatic Rifle to insure the fact that it is unloaded?

A. Operate the gas lever by hand several times.

INDIVIDUAL COMPETITION GENERAL.

Q. How many times per year may each officer or man fire the individual competition course?

A. Once per year while attached to each division.

Q. Since officers are not entitled to compete for prizes, why should they fire the course?

A. For credits for their division.

Q. At what range is the course fired?

A. Any range.

Q. What target is used?

A. Any target of any size.

Q. What kinds of fire does the course include?

A. Slow, and changing positions fire.

Q. How many shots in the course?

A. Thirty (a bandoleer for two men).

Q. Name the positions and the number of shots in each position in slow fire.

A. Prone, kneeling, squatting and sitting. Five shots in each position.

Q. How many strings of changing position fire?

A. Two.

Q. What is the value of a prize in the individual competition general?

A. $1.00.

TEAM COMPETITIONS.

Q. What kind of team competitions are authorized?

A. Primary team, division team, and ships team competitions.

Q. How many officers may fire on any team?

A. Two.

Q. What is the rule about prize money when officers are members of winning team?

A. Only the enlisted men receive prize money and the amount paid to each is not increased.

Q. Suppose, for example, six teams are entered in a division team competition, what arrangements could be made in regard to prizes?

A. They could be divided beforehand into a competition with four teams, with a prize of $5 to each man of the winning team, and a separate competition with two teams, with a prize of $2 to each man of the winning team; or, the teams could all fire together and the first team get $5 and the second team $2 prizes.

Q. Suppose, for example, sixteen teams are entered in a ships team competition, what arrangements could be made in regard to prizes?

A. They could be divided into two separate competitions beforehand, each competition with $20 prizes to the first team, $10 prizes to the second team, and $5 prizes to the third team; or, the teams could all fire together and the first two teams each get $20 prizes, the next two $10 prizes, and the next two $5 prizes.

NOTE.—In either event each officer and man on the teams with the enlisted men winning $20 prizes and $10 prizes would earn a team credit for expert team rifleman qualification.

Q. Why is a copy of the range of teams whose members earn credits for expert team rifleman sent to the Navy Department?

A. So that data in requests for qualification as expert rifleman can be verified.

Q. How many members compose a team in all team competitions?

A. Eight.

PRIMARY TEAM COMPETITIONS.

Q. How many primary team competitions may each division hold annually?

A. One.

Q. How many teams may be entered?

A. Two, or more.

Q. What is the course fired by each man?

A. The same course as the individual competition general.

Q. What is the value of prize to each man of the winning team?

A. $1.00.

DIVISION TEAM COMPETITION.

Q. In how many competitions per year, and with what teams may a division (company, etc.) enter a team in division team competitions?

A. Two per year, one with other divisions of the same ship (station, regiment, battalion, etc.), and one with divisions (companies, etc.) of other ships, etc.

Q. When a ship, etc., is not organized into divisions, how many teams may it enter in a division competition with each other?

A. Four.

Q. In a division team competition with teams of other ships?

A. One.

Q. What course is fired by each member of the team in a division team competition?

A. The same as in the individual competition general.

Q. When fewer than four teams compete, what is the value of prize to each man of the winning team?

A. $2.00.

Q. When four, or more, teams compete?

A. $5.00.

SHIP'S TEAM COMPETITION.

Q. Each ship, etc., is authorized to enter one team in how many ships team competitions per year with other ships or stations, etc.?

A. Two.

Q. Who may arrange for competitions with other ships or shore stations when circumstances permit?

A. Commanding officers.

Q. What course is fired by each member of a ships team?

A. The expert rifleman course plus a skirmish run.

Q. When should the skirmish run be fired?

A. After rapid fire, and before changing positions fire.

NOTE.—If the skirmish runs are fired first, interest on the part of teams which make low runs will be lessened. But the skirmish runs should not be fired last because a match is more interesting when the firing at the finish is a kind in which the score of each string can be seen at once on the firing line.

Q. What is the rule about the announcement of windage in the commands for skirmish in team competitions?

A. The commands for windage are omitted.

Q. What is the rule about coaches in team skirmishes?

A. One coach may accompany each skirmisher.

Q. How is each skirmish run composed?

A. Of an equal number of skirmishers from each team.

Q. When fewer than four teams compete, what prizes are awarded?

A. $5 to each man of the winning team.

Q. When four teams compete, what prizes are awarded?

A. $10 prizes to the first team, and $5 prizes to the second team.

Q. When eight teams compete, what prizes are awarded?

A. $20 prizes to the first team; $10 prizes to the second team and $5 prizes to the third team.

COLLECTIVE FIRE COURSE.

Q. How many firers in a collective squad?

A. Eight.

Q. Who gives the command for firing?

A. Either the group commander or the squad commander, as the officer in charge directs.

Q. What is the rule in regard to the arming of squad commanders?

A. They will not be armed with rifles.

Q. How many targets are used for each squad?

A. One.

Q. At what ranges and from what positions is the course fired?

A. The same as in the skirmish.

Q. How is the fire delivered?

A. By volleys.

Q. How many volleys are fired at each range?

A. Five.

Q. How many rounds does each man fire?

A. Twenty.

Q. What about the time limit?

A. There is no time limit.

Q. After the commands, "Unlock pieces; At your own target," what are the commands given by a squad commander for firing each volley?

A. "Squad Aim. Fire."

Q. Collective fire can be conducted at the same time as what other kind of fire?

A. Skirmish.

Q. In scoring in collective fire, what value is assigned to the hits?
A. The regular values.
Q. When is the target marked?
A. At the end of the run.
Q. How many times per year may each officer and man fire in a collective fire squad?
A. Once per year, while attached to each division.
Q. What is the rule about which squads may compete together?
A. They must be from the same division.
Q. What exception is there to that rule?
A. When detachments are sent to distant ranges competitions may be organized as circumstances permit.
Q. When officers are firing members of squads, what is the rule in regard to prizes?
A. No prizes are paid to officers.
Q. What is the value of the prize to each firing member and to the squad commander of a winning squad?
A. Fifty cents times the number of squads competing.

THE PISTOL COURSE.

Q. How many times per year may each officer or man fire the pistol course?
A. Once per year while attached to each division.
Q. Why should officers fire the course?
A. For credits for their divisions.
Q. At what range is the course fired?
A. At any range.
Q. What target is used?
A. Any target.
Q. What kinds of fire does the pistol course include?
A. Slow and rapid fire.
Q. Name the position and number of shots in each position in slow and rapid fire?
A. Prone, kneeling, squatting; five shots in each position.
Q. How many shots in the course?
A. Forty.
Q. What value is given to hits?
A. The regular values. (All hits count.)
Q. In scoring on the firing line, what is done to prevent markers in the butts from knowing who is firing?
A. The name of the firer is not announced by the scorer, but the number of the target is announced instead

Q. With automatic pistols, what safety precautions should be taken to see that they are unloaded while not in active use at the firing point?

A. The magazines should be removed.

Q. Where is the only place on a range where any one should handle a pistol, loaded or unloaded?

A. Only on the firing line, when fully abreast of the firers.

NOTES ON PISTOL PRACTICE.

Q. When a pistol is first taken in hand, what should be done?

A. Make sure that it is not loaded.

Q. How do the sights appears in aiming?

A. The tip of the front sight is flush with the middle of the rear sighting groove.

Q. With most pistols, where is the aim usually taken at 25 yards?

A. Usually at the bottom edge or in the lower part of the bull's-eye.

Q. At 50 yards?

A. Usually at the center or upper part of the bull's-eye.

Q. How is the stock of the pistol grasped?

A. As high up as possible.

Q. How is the trigger squeezed?

A. Start with a light grip and gradually squeeze with the whole hand.

Q. How can steady holding be acquired?

A. By much snapping practice.

Q. Why is some snapping practice with each pistol used necessary?

A. To get acquainted with the trigger pull.

Q. On which knee do men kneel in pistol practice?

A. On either knee.

Q. When the slide remains open after the pistol is fired, what does it indicate?

A. It indicates that the magazine is empty.

Q. How is the magazine removed?

A. By pressing the magazine catch.

Q. When the magazine is inserted, what indicates that it is home?

A. A clicking sound.

Q. When a filled magazine is inserted, how is the chamber loaded from the magazine?

A. By drawing the slide fully back and releasing it.

Q. How may eight cartridges be placed in a piece?

A. By loading the chamber single loader fashion, and then inserting a full clip of seven cartridges.

Q. When is the pistol carried with a cartridge in the chamber?

A. Only in emergencies.

Q. How is the pistol ordinarily carried in service, when loaded?

A. With only the magazine loaded, and with the chamber empty.

Q. What is done to unload the chamber or to make sure that it is not loaded?

A. Draw the slide to the rear until the slide automatically remains in the open position.

THE CONDUCT OF RANGE PRACTICE.

Q. When the firing party is a large one, what should the officer in charge provide?

A. A megaphone.

Q. What should the officer or petty officer in charge of the butt details provide?

A. A watch, preferably a stop watch.

Q. In addition to the firers, what others accompany the party from each division?

A. An officer or a petty officer in charge, a petty officer or a competent man in charge of the butt detail, a telephone man for the firing line and one for the butts, a coach for each firing point, and a marker in the butts for each target.

Q. In individual courses who scores?

A. The firers score for each other in turn.

Q. In team matches how are scorers provided and assigned?

A. Each team provides a special scorer, who is assigned to score for another team.

Q. In the marksman, sharpshooter and expert rifleman courses, how many firers are assigned to a target?

A. Four.

Q. How long does it take four men per target to complete these courses.

A. A half day.

Q. In the individual competition general, primary and division team, and pistol courses, how many men can complete the course in half a day?

A. Eight.

Q. In slow fire, rapid fire, and changing positions fire, how many shots are fired before the firer leaves the firing point?

A. Each firer fires all of his slow, rapid or changing positions fire before he leaves the firing point.

Q. When should changes in the kind of fire be made and why?

A. Not until the entire ships party is ready, because when small parts of the line take up different kinds of fire independently, confusion, with consequent loss of time, results.

Q. When about to take charge of a firing party or act as coach, how should the memory be refreshed so that none of the duties will be overlooked?

A. Read the duties outlined in the Small Arms Firing Regulations. (Paragraphs 292 and 293, also for pistol practice paragraph 269.)

Q. State three reasons why, in the Navy, all men fire singly and not in pairs?

A. A coach cannot properly supervise more than one firer at a time; there is no annoyance to the firer in waiting for his turn to fire; and there is no confusion in scoring.

Q. Why do buzzers make markers inattentive?

A. When buzzers are used, markers do not watch the target closely to see when it is hit.

Q. Why should you never press a buzzer when a target is to be re-marked?

A. The marker will pull the target and mark a miss.

Q. When is the expression "Mark No. ——" used?

A. When the target has been fired at and has not been pulled.

Q. When is the expression "Re-mark No.——" used?

A. When the target has been pulled and marked, and when the firing line wishes it pulled again and examined by a superviser.

Q. When is the expression "Disk No.——" used?

A. When the firing line desires the target disked or disked again without pulling the target.

Q. If a target gives bad service, what should be done instead of sending angry messages to the butts?

A. Call the one in charge of the markers to the telephone and explain definitely the trouble.

Q. How should all scoring be done?

A. The scores should be entered on a blackboard in plain sight of all competitors and bystanders.

Q. Give an example of announcing the value of a score in slow fire, rifle.

A. "Seaman ——, first shot, prone, a five."

Q. In rapid or changing position fire?

A. "Target Number One, Seaman ——, one five, two fives, three fives, one four, two fours."

Q. In pistol practice, why is the name of the firer omitted in announcing the score?

A. So that the marker in the butts, who can hear the announcement, will not know who is firing?

Q. How are hits on the wrong target scored?

A. As misses.

Q. Why should a firer examine the totals on the score board?

A. Because only the totals are scored on the record sheets, and the totals cannot be questioned after leaving the range.

Q. When is the score board erased?

A. Not until orders are given. All scores should remain on the board until all the firing in the course is completed.

NOTE.—An easy way to add a score is to count the number of points down from an average of fives and subtract the number from the possible score; or count up and then down from an average of fours and apply the difference to the total with an average of fours.

Q. When is the announcement of the prize winners made?

A. Before the party is dismissed.

Q. How many markers are assigned to a target, and why?

A. Only one. If there are more, arguments may arise as to who is to do the work.

Q. If two targets are used on carriers to counter-balance each other, what must be done with the rear target?

A. It must be faced to the rear so that the target will be used single target fashion.

Q. How does the use of spotters in slow fire prevent careless marking?

A. The disking must agree with the location of the spotter.

Q. How do they minimize fraud?

A. It is too much trouble for a busy marker to punch and paste holes through a target when a bullet hole is there ready to receive the spotter.

GENERAL REGULATIONS.

Q. What are the heights of the parapet for the prone, kneeling and sitting positions?

A. Prone, 12 inches; kneeling, 24 inches; sitting, 30 inches.

Q. When ranges are not provided with parapets, how may the firing in the sharpshooter course be held?

A. Without rests.

Q. What is the rule in regard to trial or sighting shots?

A. None are allowed except in the machine gun course.

Q. What may be done to the score of men who lose their ammunition?

A. They may be given a zero score for each round lost.

Q. When the word "ship" is used in the Small Arms Firing Regulations, what else is also understood?

A. A shore station, marine barracks, regiment, separate battalion, destroyer, or a division of submarines.

Q. When the word "division" is mentioned, what is also understood?

A. A company, detachment, submarine or the officers and men not attached to divisions.

Q. When does the small arms year begin and end?

A. January 1st to December 31st.

Q. What is included in the term "current enlistment" as used in the Small Arms Firing Regulations?

A. Extensions of enlistments.

Q. When attached to ships in commission or to divisions, etc., ashore, what officers and men should be required to fire the courses as prescribed, and who else may fire?

A. Officers of the line of the Navy or Marine Corps, below the rank of lieutenant commander or major, all men of the seaman branch of the Navy, and all enlisted men of the Marine Corps should be required to fire. All officers and men may fire.

Q. What about the expiration of qualification of officers and men?

A. An officer's qualification does not expire. When a man re-enlists, he starts over again, and as an unqualified man, and may fire again in the same division.

Q. What small arms data are entered in the service record book?

A. All qualifications as marksman, sharpshooter, and expert rifleman; all re-qualifications as expert rifleman and all team credits which count for expert team rifleman qualification.

Q. What opportunity should be given to permit men to learn the results of the day's firing?

A. The score sheets should be posted on a protected bulletin board.

Q. What is the only medal awarded by the Navy Department for small arms work?

A. The expert team rifleman medal.

Q. If this medal is lost, at what cost may it be replaced?

A. $21.

Q. What are the requirements for this qualification?

A. Qualification as expert rifleman and re-qualification in a later year as expert rifleman, and, in addition, any three of the following team credits:

(a) Membership on a national match team.

(b) Membership on a division team, a ships team, or an officers team winning first place with four teams competing, second place with eight teams competing, etc., adding one place for each four teams competing.

Q. How many credits does a division secure for each man who, during the year and while attached to that division, finally qualifies as marksman, sharpshooter, or expert rifleman, or re-qualifies as expert rifleman?

A. Marksman, 2; sharpshooter, 3; expert rifleman or re-qualification as expert rifleman, 5.

Q. How many credits for each officer or man who fires the pistol course, the machine gun course, the individual competition general, or in a collective fire squad?

A. One for each course fired.

Q. For what else do divisions receive credits?

A. For entering teams in division team competitions and for standing of teams in division team competitions.

Q. How is the figure of merit of a division found?

A. By dividing the number of credits by the number of officers and men in the allowed complement of the division.

Q. How is the figure of merit of a ship found?

A. The sum of the credits of all divisions, and ships team credits, is divided by the number of officers and men in the allowed complement of the ship.

SUMMARY OF QUESTIONS UNDER FIRING REGULATIONS FOR SMALL ARMS, U. S. NAVY, 1916.

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PART THREE

"S–10"

ORDNANCE AND GUNNERY

Note: See also Part II, "Y"

PART THREE.

"S-10."

ORDNANCE AND GUNNERY.

1. GUNS.

Q. Name and locate the following parts of a gun:

1. Parts as viewed from outside—breech, muzzle, body or cylinder, chase.

2. Parts that make up the assembled gun—tube, jacket, chase hoops, jacket hoops, locking hoops.

3. Interior parts—screw box, gas-check seat, mouth, chamber rear slope, chamber, chamber front slope, bore, rifling.

A. Found in Part II, "Y," and by the study of the gun at which you are stationed.

Q. Answer the following with reference to the gun at which you are stationed:

1. What is its type and mark; its caliber and length in calibers?

2. Type and mark of mount?

3. What breech mechanism is used?

4. What firing mechanism?

5. What is its weight?

6. Initial velocity?

7. How is the gun elevated?

8. How trained?

9. How is its recoil taken up?

10. What is its normal amount of recoil?

11. How is counter-recoil taken up?

12. What kind of ammunition is used?

13. Give weight of projectile.

14. Weight of firing charge.

15. Weight of ignition charge.

16. Weight of bursting charge.

17. Location of magazines and shell rooms that supply ammunition.

18. General method of ammunition supply.

Q. What is meant by I. V., or initial velocity?

A. The velocity of the projectile when it leaves the muzzle. It is estimated in feet per second, designated as "fs," or foot seconds.

Q. What velocities are now usual in our guns?

A. 2600 to 2900 foot seconds.

Q. What affects the velocity of the projectile principally?

A. The pressure behind it. This depends on the quantity and the quality of the powder and the length of the gun.

Q. Why does the length of the gun affect the velocity of the projectile?

A. Because the longer the gun, the longer time the projectile is subjected to pressure behind it, hence the greater its velocity becomes.

Q. What is meant by the length of bore of a gun?

A. The distance from the face of the breech plug to the muzzle.

Q. How is the length of a gun designated?

A. By the number of calibers it is long. A 12-inch 45 caliber gun is therefore 45 feet long. In the same way the length of bore is spoken of in calibers, and also the length of rifling.

Q. What is meant by length of rifling?

A. It is the distance from the beginning of the rifling to the muzzle.

Q. Where does the rifling begin?

A. Forward of the compression slope. The compression slope is just forward of the powder chamber.

Q. What is the powder chamber?

A. That part of the bore in which the powder is placed before firing. It is larger in diameter than the rest of the bore so as to allow for a sufficient powder charge without necessitating that the sections of powder be made too long.

The answers to the following have been given in Part II, "Y."

1. What are the different parts of the rifling?
2. What are lands and grooves?
3. How does the rifling impart a twist to the projectile?

Q. What is the shape of the ordinary spiral of rifling?

A. It starts from the powder chamber, then gradually increases its twist until, shortly before it reaches the muzzle, it has a uniform twist of one complete turn in 25 calibers length. This varies somewhat. Some guns have uniform twist from the beginning.

Q. What is the depth of grooves?

A. About one-twentieth of an inch.

2. BREECH MECHANISM.

Q. What is the difference between the breech mechanism and the firing mechanism?

A. By the term breech mechanism is meant the system in use to close the breech of the gun and the parts for opening and closing the same. The firing mechanism consists of the

parts actually concerned with the inflammation of the charge. The firing mechanism is carried on the breech mechanism.

Q. What are the principal parts of the breech mechanism?

A. Screw box, block, carrier, hinge plate, operating lever.

Q. Locate these parts on the gun at which you are stationed.

3. GUN MOUNTS.

Q. What the general features of a mount for a broadside gun?

A. The gun recoils through the slide. To take up the recoil two closed hydraulic cylinders are cast in one with the slide. A piston rod yoke shrunk over the gun body takes hold of two piston rods that are connected to their pistons in the closed hydraulic cylinders. The rods therefore move with the gun, but the cylinders are attached to the slide and are consequently stationary. The slide is balanced on trunnions, which are supported on a top carriage. The top carriage rests on rollers and may be trained laterally. The trunnions are on the slide near the center of gravity, so the slide and gun may be elevated and depressed.

Q. Give general description of recoil system.

A. The recoil cylinders consume the energy of recoil in a certain allowed distance of recoil. In each cylinder there are a series of short springs separated by discs so that the effect of breaking one spring would not affect the counter recoil of the gun. When the gun is fired the top carriage remains fast, holding the slide from recoiling by means of the trunnions. The gun itself recoils in the slide. The piston rods—which by means of the piston rod yoke are secured to the gun—are jerked to the rear. The pistons slide along inside of the recoil cylinders, while the liquid escapes from one side of the piston to the other through grooves in the inside of the cylinder. When all the energy of recoil has been taken up, the counter recoil springs, expanding between the rear bonnet of the cylinder and the piston, press the piston forward into its normal place, thus running the gun back to battery.

Q. What is the liquid in the recoil cylinders?

A. 80 per cent glycerine, 20 per cent distilled water.

Q. In turret guns, what devices are replacing this type of recoil cylinder?

A. The piston as before recoils in a cylinder, but the cylinder contains no springs. The piston has a hole near the top and another near the bottom to allow it to pass over two "throttling rods" that extend the whole length of the cylinder. The throttling rods taper; their largest cross sectional area

is at the extreme after and forward ends, the smallest diameter is at the middle of their length. When the gun recoils, the piston rod, as before, draws the piston through the cylinder against the liquid with which the cylinder is filled. The recoil is at first fast because the piston is passing over the reduced area of the throttling rods. When the middle distance is reached, however, the recoil is gradually "throttled" as the area of the throttling rods increases.

Q. When using this system of checking recoil, how is the gun sent back to battery?

A. Just as the recoil cylinders are filled with liquid but contain no springs, so the cylinders that effect the counter recoil contain springs and no liquid. During recoil, the springs in these cylinders, called spring boxes, are compressed. When the limit of recoil has been reached, the springs expand and force the gun back to battery.

Q. How is the counter recoil taken up in this case?

A. The forward bonnet of the cylinder containing the throttling rods is recessed; the piston rod is extended through the piston and shaped to fit in this recess which, during recoil fills with liquid. When the gun is sent back to battery the projection of the piston rod cushions against this recess and so the shock of counter recoil is absorbed.

Q. What is the approximate recoil of the gun at which you are stationed?

Q. Of a twelve-inch gun?

A. About 33 inches.

4. SAFETY ORDERS.

Q. What are the instructions regarding the use of general alarm gongs and cease firing gongs?

A. Don't use them for any other than their designed purpose.

Q. What about lights in magazines?

A. Never take a naked light into a magazine or other compartment containing explosives.

Q. What about live ammunition?

A. Never use it for drill purposes.

If a live cartridge case is fitted in any gun for any purpose other than firing, remove the firing pin and mechanism from breech plug during such test.

Q. What precautions in salvo firing?

A. Take care not to open the breech of a loaded gun. Often a plugman, if he is not alert and watchful for the recoil of his own gun, will imagine that his gun has fired when he hears the report of the other gun of the turret.

Q. What about the mushroom?

A. Sponge it after each shot.

Q. What about posting safety orders?

A. All that pertain to the armament of the ship must be kept posted in convenient places easy of access to all members of the crew, and all members of the crew concerned shall be thoroughly instructed in them.

Q. What about closing the breech?

A. Close the breech without delay as soon as the gun is loaded. When a gun which has been fired is still warm when reloaded, and it later becomes necessary to remove the charge, the gun need not be fired, but should be unloaded. When it is apparent that the service of the gun will not be resumed within a reasonable time, the powder involved will be dumped in distilled water and kept in that condition until turned in to a naval magazine at the first opportunity.

Q. What precautions against unlocked plugs?

A. It is possible to fire by percussion when the plug is swung home, but not rotated and locked. Take every possible precaution to avoid accident from this cause. Should any of the parts operating the breech mechanism and the lock break, and the lock be then operated, the gun might be fired with the plug unlocked. Take every possible precaution to avoid accident from this cause.

Q. What about the tompion?

A. One member of the crew is detailed to remove the tompion from the gun and to see that the bore is clear. If this is your duty, never forget to carry it out.

Q. What precautions in regard to the lock?

A. Never unlock or open the breech of a gun while there is a live primer in the lock. Never hook a firing lanyard to the trigger of the lock until after the breech plug has been closed and locked and the gun primed. Never open the breech of a gun while the lock is cocked or while the lanyard is hooked to the trigger. When the order "Cease Firing" is given, loaded guns must be put in such condition as to render accidental discharge improbable. This necessitates for

B. L. R. Guns.....removal of primer,

R. F. Guns.....removal of case.

If a crew leave a gun at any time, the gun shall be left in the condition of cease firing.

Q. Under what conditions is it permissible to prime a breech-loading gun while the breech is open?

A. Only in breech-loading guns where the wedge block containing the firing pin is arranged to operate automatically by the operation of the breech mechanism in such a manner that

the firing pin cannot be brought opposite the primer until the breech is closed and locked.

Q. What about the condition of the firing pin?

A. The firing pin of every concentric screw breech mechanism is directly in rear of the primer when the plug is closed but not rotated. Take care to see that the firing pin and all parts are in good condition, as the failure of a part of the mechanism might permit the firing of the gun before the plug is rotated.

Q. What about broken firing pin?

A. Always bear in mind and guard against the danger of a broken firing-pin point or of the fusing of metal on the face of the breech plug due to a primer blow-back.

Q. What about jammed cartridge cases?

A. Don't use force greater than that which you can apply by hand alone in loading a cartridge case into a gun. If a cartridge case will not freely and fully enter the chamber of the gun by force of the hand alone, carefully extract it and put it aside. Mark it to indicate its condition and turn it into store at first opportunity.

Q. What about ramming shells in turret guns?

A. Never ram shells by interposing sections of a powder charge between the head of the rammer and the base of the shell.

Q. Why must the greatest prudence and caution be exercised whenever a miss-fire occurs?

A. Because of the danger of a serious accident due to the opening of the breech of a gun too soon after a hangfire. Many lives have been lost due to accidents of this nature.

Q. When shall a hangfire be regarded as probable?

A. Whenever a gun pointer presses the firing key or pulls the lock lanyard and the gun fails to fire.

Q. When are you justified in distinguishing between the case of a miss-fire due to failure of primer to ignite and a miss-fire due to the failure of the charge to ignite after the primer has ignited properly?

A. Only when an examination of the extracted primer shows that the primer itself failed to fire.

Q. How is the primer removed under these circumstances?

A. By the use of a specially designed tool in the hands of a man who takes care to stand well clear of the recoiling limit of the gun.

Q. In time of peace, how much time must you wait between the last effort to fire the gun and the opening of the breech?

A. 30 minutes.

Q. What is the exception to this rule?

A. This wait of 30 minutes is not necessary when, in the case of a gun using a breech loading primer, an examination of the extracted primer shows that it did not fire. In such a case there is no danger of a hangfire.

Q. Who decides the length of the above-mentioned interval in time of war?

A. The captain. In time of war the danger due to a hangfire may be counterbalanced by the more important considerations of battle.

Q. In the case of a miss-fire, what efforts to fire the gun should be made?

A. All possible efforts that do not necessitate opening the breech. Remove the old primer by means of the primer extractor and insert a new one, and fire it, using either electric or percussion mechanism as seems desirable. Continue such efforts as long as there is a reasonable chance of firing the gun. A gun using cartridge cases and fixed primers shall be tried again, either by electricity or percussion, or by both, whenever this can be done without opening the breech.

Q. What about fire hose?

A. Lead it out as at fire quarters and keep fire pumps running whenever the guns of a vessel are fired.

Q. What are instructions in regard to ammunition outside of magazines?

A. Allow only ammunition that is immediately required during firing to remain outside of the magazines.

Q. At target practice, how much ammunition for the intermediate or secondary battery guns may be assembled on deck?

A. No more than the necessary allowance for the guns that are to fire on the next run, but no charge for a breech-loading gun shall be taken out of its tank, nor shall the top of the tank be removed until immediately before the charge is required for loading. For guns using fixed ammunition and for guns using separate powder charges, put up in cartridge cases, the allowance required for the gun or guns that are to fire on the next run may be removed from the boxes.

Q. What about ammunition supply tests?

A. They may be carried out when the guns of a vessel are not being fired. Such ammunition as may be necessary for making the tests may be assembled on deck, under proper precautions.

Q. What precautions in regard to the use of the Morris-tube?

A. No practice of this kind shall be held without an efficient bullet catcher securely attached to the muzzle of the gun or otherwise suitably secured in the line of fire of the small rifle.

Q. What are the instructions in regard to the automatic shutters that separate a turret from its handling room?

A. Never secure them in an open position during drills, exercises or while the guns are firing. In developing maximum speed of cars, watch the shutters carefully and make such adjustments as may be found necessary. In case of damage to the shutters, make a report as to the extent and cause of such damage. State whether the trouble was due to faulty adjustment of the shutters or to excessive speed of the hoist.

Q. In case these shutters are damaged at target practice so that they cannot fulfill their purpose, what is done?

A. Both guns of the turret cease firing. Do not resume firing until the shutters of both guns are in working order.

Q. What is the exception to this rule?

A. If the hoist is of the trunked-in type that has automatic doors in the handling room that insure the separation of the turret chamber from the handling room, the firing may continue so long as these doors remain in efficient condition.

Q. What is done in case the damage to the shutters cannot be repaired within a reasonable time?

A. The crew of the turret shall fire the remainder of the allowance from another turret.

Q. What about sponging guns?

A. The chamber of every broadside breech-loading gun using charges that are unprotected by metal cases shall be sponged after each discharge before the next charge is loaded. The combined sponge and rammer is used with the bristle dampened with water. Enter the sponge in the chamber immediately following the shell, shove home as far as the shell, when seated, will permit and then withdraw it.

Q. Why is this necessary?

A. Because there is an inflammable gas present in the chamber of a gun after firing. Under certain conditions this gas may ignite the exposed charge while the gun is being loaded for the next round. When the gun is sponged in the manner described above, it is not possible for inflammable gases or bits of burning powder bags to remain in the powder chamber to endanger the ignition of the charge.

Q. When may the precaution of sponging the gun be omitted?

A. When adequate mechanical means, approved by the department, have been fitted for the purpose of promptly clearing the chamber and the bore of all gas and fragments of powder bags. When such an appliance is not working at the standard pressure for which it was designed, the gun must be sponged as described above.

Q. How avoid the danger from inflammable gases or bits of burning material in the bore of turret guns?

A. Make sure that all parts of the bore are clear before the charge for the succeeding round is hoisted above the turret floor. When the breech plug is opened after firing, a sufficient time should be allowed to elapse for the gas and smoke in the chamber and bore to dissipate. Don't bring the top of a loaded ammunition car above a point 6 feet below the axis of the trunnions—or, if loading by hand, don't open the powder-box doors—until the bore of the gun is clear.

Q. How do you know when the bore is clear?

A. When firing any powder bag gun, whether fitted with a gas ejector or not, it shall be the duty of a designated member of the crew to look through the bore of the gun immediately after the opening of the breech and note when the bore is clear. This designated member of the crew then sings out "Bore clear!" In order to guard against the danger of flarebacks the charge shall not be exposed at the breech of the gun until after the announcement "Bore clear!"

Q. What precautions are taken with cartridge-case guns?

A. It is not necessary to sponge out guns using fixed ammunition, as the charge is protected by a metal cartridge case. But before stowing the empty cartridge cases below, free them from all inflammable gases. To do this, lay the cases on their sides and test each one for the presence of gases by inserting a lighted taper in each case as far as it will go, or by washing the cases out with soap and water.

Q. What about strengthening cartridge bags?

A. Never add to the material of the cartridge bags or strengthening tapes without authority. If you find that it becomes necessary to stiffen the charges, don't use additional cloth or tape. If necessary, retie the old cloth or tapes, or replace by new material similar to the old.

Q. What about leaving magazine flap doors open?

A. Leave open the magazine flap doors of only such magazines as are in use to supply charges. Except during the time of actual passage of the sections of the charge through the door, the magazine flap doors shall be down.

Q. What about the unnecessary exposure of charges for turret guns?

A. In all the magazines in use there shall not be removed from the tanks at one time more than one charge for each gun, and then only as necessary to supply the demand in the handling room. Nor shall there be allowed in the handling room at any time an accumulation of exposed sections for more than one charge for each ammunition hoist.

Q. What about the posting of safety orders in turrets?

A. A copy of all safety orders pertaining to the turret and the handling room shall be posted in every turret and handling room for the information and instruction of all concerned. You should read these orders carefully; your knowledge of them should be absolutely accurate and complete, for on such a knowledge may depend the safety of the ship and the lives of your shipmates.

Q. What about inspecting recoil cylinders?

A. Before the firing of any gun, except a saluting gun, the captain shall require a report that the recoil cylinders have been inspected and filled in the presence of the gunnery and division officers.

Q. What kind of shell is to be used for subcaliber of ex-caliber practice?

A. Only blind shell.

Q. What special care in loading powder in turret guns?

A. See that all sections of the charge are entered in the chamber with the ignition ends toward the breech.

Q. What about the removal of fuses from loaded shell?

A. It is done only when specially directed by the Bureau of Ordnance.

Q. What precautions with torpedo air flasks?

A. Charge them slowly to full working pressure, and let them cool naturally by air cooling. Make up loss in working pressure just previous to firing. The artificial cooling of torpedo air flasks after charging, by spraying them with water or by flooding the torpedoes in submerged tubes, is prohibited. The testing of air compressors by charging torpedo air flasks at the full speed and capacity of the compressor is prohibited.

Q. What precautions in handling mines?

A. Comply strictly with current instructions laid down for mining exercises. In these exercises the mines shall be handled exactly as they would be were they fully armed.

5. DEFINITIONS PERTAINING TO GUNNERY.

Q. What is the trajectory?

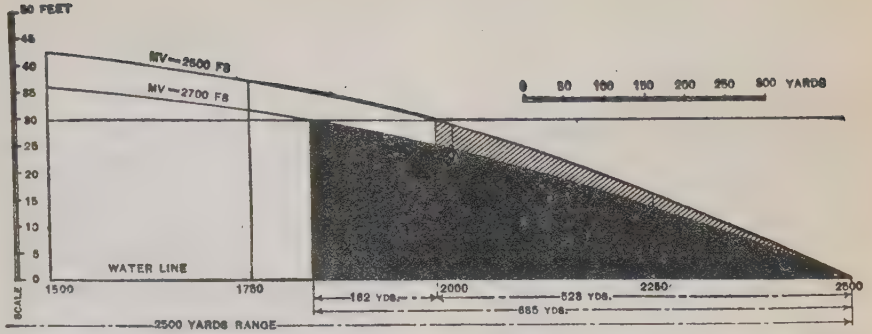
A. The path of a projectile through the air.

Q. What is the danger space?

A. For any particular height, the danger space is the horizontal distance the shell from a certain gun would traverse, after just passing at the given height above the ground.

Q. Does the danger space increase with the height of target?

A. Yes; the higher the target, the greater the danger space. If the target is anywhere within the danger space it will be hit; hence the designation "danger space."



12-inch B. L. Gun. Dangerous space increased from 523 yards to 685 yards by increasing velocity from 2500 f. s. to 2700 f. s.

Q. Why are high-powered guns more accurate than low-powered guns?

A. Because high-power guns give flatter trajectories than low-power guns, and the flatter the trajectory the greater the danger space. Hence, there is less danger in missing vertically due to errors in range. To understand this, see plate. The curved lines show parts of the trajectories of the projectiles. The solid portion of the figure has a base which represents the danger space for a target 30 feet high for a 12-inch gun, whose initial or muzzle velocity is 2700 foot seconds. The base of the shaded portion of the figure shows the danger space under the same conditions for a 12-inch gun whose initial velocity is 2500 foot seconds. In each case the range is 2500 yards. The danger space for the lower velocity is 523 yards, for the higher velocity it is 685 yards.

Q. What is meant by the arc of fire?

A. The arc of fire is the angle through which a gun, as mounted on board ship, can be trained and fired. In torpedo defense it is customary to assign each gun of the torpedo defense battery to a certain arc of fire. In this way the whole ship is protected.

6. TORPEDOES.

Q. What is a torpedo?

A. It is a weapon carrying a head filled with gun cotton, and so fitted with motive gear that after firing it runs by its own machinery beneath the water and explodes when it comes in contact with some solid object.

Q Describe in general terms the torpedoes used in the Navy.

A. There are two general types, the Bliss Leavitt and the Whitehead. Each type has the following general characteristics: (1) A war and an exercise head. The war head contains a quantity of gun cotton (about 140 pounds of wet gun cotton). The gun cotton is exploded by means of a war nose, which upon impact with a solid body, explodes a fulminate of mercury detonator, which explodes a dry gun cotton primer. The dry gun cotton primer, in turn, explodes the charge of wet gun cotton. The exercise head is similar to the war head, but it is for the purpose of target practice and is, consequently, brought up to the weight of the gun cotton charge by filling it with water. (2) An air flask which is charged with air to a pressure as high as 2,250 pounds per square inch. (3) An

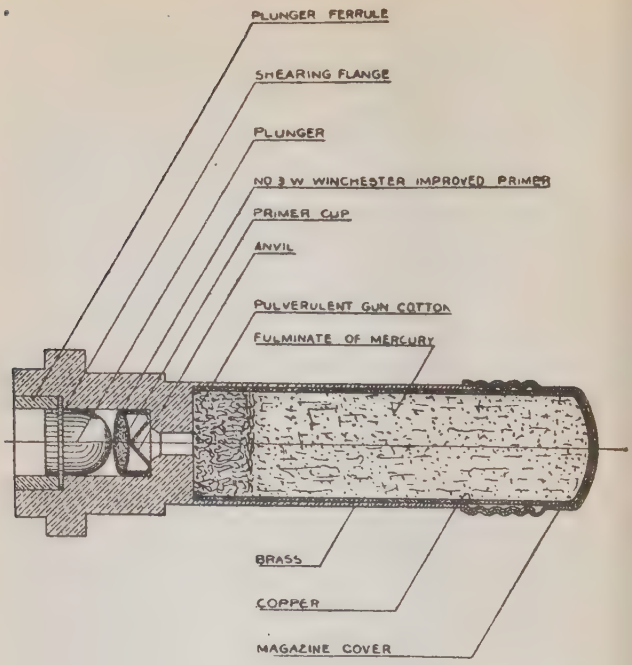
engine and a system of valves by means of which the power stowed in the air flask is used in propelling the torpedo. The Bliss-Leavitt torpedo is fitted with turbine engines of the Curtis design; the Whitehead torpedo with 3 or 4 cylinder reciprocating engines. In the hot-air torpedo the pressure of the air is increased by heating it by means of a combustion flask in the torpedo. In this combustion flask alcohol is burned in contact with the air flask increasing the temperature and thereby the pressure to such a degree that the range of the torpedo is about double that of a cold-air torpedo. (4) The hydrostatic and pendulum gear, by means of which the torpedo is forced to travel level and at a set depth below the surface of the water. (5) A gyroscopic mechanism by means of which the torpedo is made to travel in a straight line, or in any given direction. (6) A tail which contains the propellers and rudders. The latest torpedoes are 45 centimeters (17.72 inches) in diameter (greatest diameter) and 5 meters (16 feet 4⅝ inches long). The maximum range of a hot-air torpedo is 10,000 yards at a speed of 28 knots. The range of torpedo firing is constantly increasing, as the weapon is increased in accuracy.

Q. What are MINES?

A. They are spherical shells of steel about 36 inches in diameter. They contain a charge of 178 pounds of wet gun cotton and a dry gun cotton primer of 1.54 pounds. Mines are anchored at a given depth, usually in harbors, to afford a protection against a hostile fleet. The mine is anchored at a depth of from 2 to 40 feet below the surface. It is capable of being fired when it is struck by a ship steaming at a speed of two knots per hour or greater. The percussion detonator used with torpedoes is the detonator used in this mine. It is a cylindrical brass tube, containing a copper case holding 35 grains of fulminate of mercury. When the ship strikes the mine, the detonator explodes, the detonator, in turn, explodes the dry gun cotton primer which explodes the wet gun cotton charge.

The detonator used with torpedoes and mines is shown in the plate.

Mines are supplied to battleships. There are also specially designed mine-laying vessels.



7. DRILLS.

The drills for each distinct type of gun in the Navy are given in the "Ship and Gun Drills." Drills vary in minor details on different ships.

Q. What is your gun station?

Q. State in full your duties at the gun.

Q. Name the stations and state in general the duties of the other members of the gun crew.

PART THREE

"S–11"

SIGNALS

Note: See also Part II, "Z"

PART THREE.

"S-11."

SIGNALS.

A Seaman Must Be Able to Send and to Receive a Signal in Both the Wigwag and the Semaphore Codes.

GENERAL QUESTIONS ON SIGNALS.

The subject of Signals should be studied and mastered by every man in the seaman branch.

Q. In what books is the System of Navy Signaling contained?

A. (1) *The General Signal Book.* This contains: In the Introduction, instructions for signaling, dressing ship, passing in review and making flags. It also contains all flag code signals grouped under five heads; "General Signals," "Battle Signals," "Boat Signals," "Vocabulary Signals," and "International Signal Letters of all Naval Vessels." It is strictly confidential.

(2) *The Battle Signal Book.* This contains: All such parts of the Introduction to the Signal Books as contain instructions for all methods of signaling; organization, definitions, and instructions for handling fleets and other tactical units; all Battle Signals taken from the General Signal Book. It is strictly confidential.

(3) *The Deck and Boat Book.* This contains: Description of boats and their equipment, and instructions for handling boats and for tactical drills and exercises with them; such parts of the Introduction to the Signal Books as describe methods of signaling other than by radio; storm signals; Life-Saving Service signals; boat signals; a number of General Signals taken from the General Signal Book of ordinary routine non-confidential nature, such as should properly be kept upon the signal bridge in port or at sea to facilitate smart work in sending and answering and executing. It is not confidential.

Q. What codes are used in Navy Signaling?

A. (1) The Flag Code.

(2) The Dot and Dash Code.

(3) The Semaphore Code.

FLAG SIGNALS.

(See Plates.)

Q. How are flag signals made?

A. The flags used consist of twenty-six alphabet flags (the same as those of the International Code), a numeral flag, three repeaters, and a number of special flags and pennants.

Q. Describe these flags.

A. Refer to plates of flags.

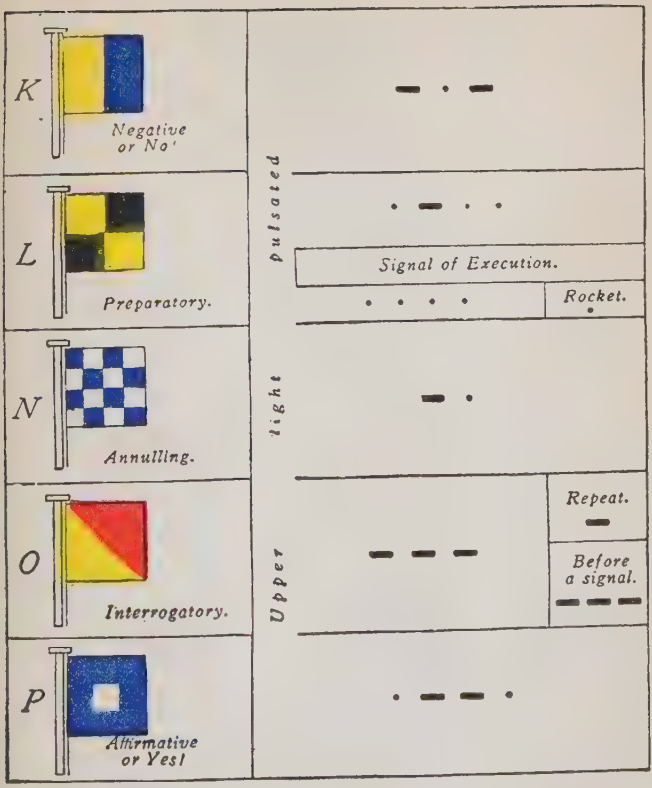
Q. Describe briefly the uses of the principal special flags.

A. THE CORNET (1) Hoisted at the *fore*, or at the highest gaff or signal yard, if the foremast head cannot be used, is a peremptory order for everybody to return on board at once, regardless of length of leave; (2) it means that a ship is under sailing orders and about to get under way; (3) hoisted half yard arm high is a call for the whole force to receive a wigwag or semaphore message.

THE ANSWERING PENNANT.—To be hoisted where it can best be seen—at the truck, gaff, or yard arm—in answering, and kept there until the signal is hauled down. At sea, if displayed at the yard arm, it shall be at the side not occupied by the speed cone, unless that leads to concealment by smoke. In port, it shall be displayed at the starboard yard arm. In order that there shall be no uncertainty as to the signal that is answered by a ship, the latter shall display the answering pennant under the call of the ship making the signal; except that in answering a signal from the senior flagship, the latter's call shall not be displayed. The answering pennant is used as a divisional point to represent the divisions of mixed quantities referred to by a signal made at the same time, or just previously.

THE PREPARATORY FLAG (Alphabet Flag L) means: (1) Prepare to execute the signal shown; (2) hoisted at 6.55 a. m. by the senior ship when two or more are in company, and hauled down at 7 a. m. is a time signal and means "Uniform same as yesterday"; (3) hoisted at 7.45 a. m. over a numeral indicates the number of the ensign to be hoisted at colors; (4) hoisted at the yard arm, in port, morning and evening, at the first call for colors, and started from the point of hoist at the first note of bugle or first beat of drum.

THE INTERROGATORY FLAG (Alphabet Flag O).—(1) Hoisted over a signal changes it into the interrogatory form; (2) as a signal display in answering to a signal means, "I do not understand," or "What signal is that?" The interrogatory hoisted alone by a flagship means "You are repeating the signal incorrectly," or "What movement are you making?" according to the circumstances, which will be evident.


K
Negative or No'
L
Preparatory.
N
Annulling.
O
Interrogatory.
P
Affirmative or Yes!
pulsated
light
Upper
Signal of Execution.
Rocket.
Repeat.
Before a signal.

Danger and Designating. Navy Register Use.

I. Dispatch. Break down. Man overboard.

Flashed "Man Overboard"

Toots for ten seconds.

Guide.

Guard.

Convoy.

Position Division Guide.

Full Speed.

Meal. Flag Officer Leaving.

General Recall.

Boat Recall with numeral above.

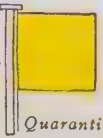
Submarine Warning

Flag.

Battle Efficiency.

Red Cross.

Q



Quarantine

Church

THE AFFIRMATIVE FLAG (Alphabet Flag P) means: (1) When hoisted in answer to a signal means, "Yes, permission granted"; (2) hoisted over a signal means that the specific work or duty called for by that signal has been performed; (3) hoisted alone as prescribed in Battle Signal Book, when getting under way with other vessels, thus, half way up foremast, "Anchor at short stay," all the way up, "Anchor aweigh" and hauled down when ready to take position; (4) when ready to steam ahead after "man overboard"; (5) in mooring ship and in other cases to signify that the duty called for by a previous signal has been completed.

THE NEGATIVE FLAG (Alphabet Flag K), when hoisted in answer to a signal, means "Not granted," or "No." The call of the ship to which it is addressed as an answer shall be displayed over it in order to avoid any chance of a misunderstanding. Hoisted over a signal, it puts the message in a negative sense. For example, the signal by a flagship "Moor," with the negative over it, means "Unmoor," or "Do not moor"; the signal "Can maintain present speed," with the negative over it means "I cannot maintain present speed."

THE ANNULLING FLAG (Alphabet Flag N) annuls all signals at that moment displayed on the same mast. In this case only, it is to be answered by hauling down all answering pennants which may have been hoisted in reply to the signal, or signals. In case ships have the signal, or signals, hoisted, they shall display the annulling flag, and haul down with their hauling down on the flagship. Hoisted alone, it annuls the last signal made on the last hoist. Any signal previously made may be annulled by hoisting the signal again with the annulling flag either over it or hoisted at the same time.

THE QUARANTINE FLAG (Alphabet Flag Q).—(1) Hoisted at the foremast head on all infected ships, or ships in quarantine; (2) hoisted by incoming ships means, "Pratique is desired."

THE GUARD AND GUIDE FLAG.—(1) Hoisted at the fore in port from sunrise to sunset by vessel that has the guard duty (except by flagship or vessel of senior officer present); from sunset to sunrise a red truck light will be displayed at the fore truck; (2) in the bows of boats doing guard duty; (3) the guard flag hoisted under a ship's distinguishing pennant, or the distinguishing pennant of the division to which the ship belongs, calls the guard boat alongside; at night the red light is displayed after the call; (4) hoisted by a ship under way and in formation signifies that that ship is the guide; (5) Under way and in formation, guide flag *under* the ship's distinguish-

ing pennant, designates her as guide; *over* a distinguishing pennant indicates that she is no longer guide; it is answered by the hoisting or hauling down of the guide flag.

THE CONVOY AND POSITION PENNANT.—(1) Worn at the fore by all ships on convoy duty; (2) in formation, when hoisted half yard arm high, means temporarily out of position; (3) all the way up, she has attained her position; (4) displayed under a distinguishing pennant by the senior officer, means to the ship signaled, "You are out of position, or out of order"; (5) used as prescribed in the Tactical Signal Book.

THE DANGER AND DESIGNATING FLAG.—(1) Hoisted alone means danger ahead; (2) a compass signal under it indicates the bearing of the danger from the ship *making the signal.*

THE DISPATCH AND BREAKDOWN (Alphabet Flag I).—(1) Worn at the *main* by ships on dispatch duty; (2) in formation it is kept rounded up at the fore ready to break in case of *accident to machinery or steering gear;* when the guide flag is displayed at the foremast head the dispatch flag is broken below it; (3) in case of man overboard it is broken and lowered part way (but not below the level of the smokestacks), as directed in the Battle Signal Book.

THE GENERAL AND BOAT RECALL FLAG.—(1) When hoisted alone is a peremptory order for all boats absent to return with all speed; (2) hoisted under a number it is a recall of the ship's boat having that number; (3) with the annulling flag over a boat's recall it indicates that the designated boat shall *not* return to the ship at the time previously prescribed; (4) under a boat's number, it recalls that boat; over a boat's number, it recalls all but that boat. At night a boat may be recalled by the display of "I," followed by the number of the boat and the ship's call letters for signature.

THE POWDER AND FIRING FLAG (Alphabet Flag B).—(1) Displayed at the fore by all vessels taking on board or discharging explosives, loaded projectiles, fuel oil or gasoline in large quantity; (2) in the bows of all boats or lighters transporting same; (3) it is displayed by ships engaged in target practice, while firing is in progress; (4) it is hauled half way down when off the firing line if the practice is to continue, and is hauled down at "Cease firing"; (5) it may also be used at sea, in formation, when standardizing propellers, to indicate that the ship is on her course and observations are in progress.

THE MEAL AND FULL SPEED AND FLAG OFFICER LEAVING PENNANT.—(1) Hoisted as a single display at the port yard arm by vessels at anchor when the crew is at meals; (2) at sea or under way, when hoisted at the same yard arm as the speed

cone it denotes one knot faster than standard speed; under the flag of a flag officer means that he is about to leave the ship.

THE BATTLE EFFICIENCY PENNANT is worn at the *fore*, when at anchor, on such vessels as may have been officially designated to fly it for excellence in gunnery, as determined by the results of the last annual Record Practice.

THE CHURCH PENNANT is hoisted *over* the ensign during the performance of divine service on board vessels of the U. S. Navy.

THE UNION JACK.—(1) When at anchor the Union Jack shall be flown from the jackstaff from morning colors to evening colors; (2) hoisted at the fore, it is a signal for a pilot; (3) hoisted at a yard arm, when a General Court Martial or Court of Inquiry is in session; in port, it is hoisted and a gun fired when the court meets, and hauled down when it adjourns.

Q. What are the "INDICATOR FLAGS"?

A. They are special flags used in conjunction with the "call flags" to call Squadrons, Divisions, Torpedo Flotillas, Torpedo Divisions, Submarine Flotillas and Submarine Divisions.

Q. What are "CALL FLAGS"?

A. Twenty-three flags representing letters of the alphabet except E, I, and T. They are designed as alphabet flags with "flys" of distinctive colors added to prevent confusion with alphabet flags. They are used in all calls by flags except the case of one vessel calling another of the same group.

Q. What are "SHIP CALL PENNANTS"?

A. Twenty-three pennants, representing letters of the alphabet except E, I, and T. Their design is based on the Dot and Dash Code, red a dot, yellow a dash and blue repeating, from hoist to fly. They are used in all ship calls made by flag hoist.

Q. How make a call by flag hoist?

A. (1) To call a ship—if in the same group hoist her "ship call pennant," if in another group hoist her "ship call pennant" under the "call flag" representing her group letter.

(2) To call Group, Torpedo Flotilla or Submarine Flotilla hoist the appropriate flag.

(3) To call a Squadron, Division, Torpedo Division or Submarine Division hoist the appropriate indicator flag over the "call flag" representing the letter of the unit called.

(4) To call all force present hoist cornet.

Q. How make a call by other systems?

A. Make the signals corresponding to the flags and pennants as explained for calls by flag hoist, except that it is *always* necessary in signals by other than the flag system to use both

the group and ship call letter. Calls are flashed in Ardois, preceded by the prefix . . . . — in Sound and Flash and by Rocket in Very.

Q. How do vessels meeting make themselves known to each other?

A. By making their calls. In case of two or more vessels the senior only makes her call and answers the communicating vessel. A vessel coming into port makes her call first to the ship in the harbor.

Q. What is the Navy Register?

A. In the Navy Register, numbers are assigned to every officer in the Navy on the active list.

Q. How are numeral signals made?

A. Numerals are concrete numbers and derive their signification from an alphabetical signal accompanying them.

Q. How is a numeral signal beyond 9999 made?

A. There is a general signal which means: "The numeral signals which follow represent thousands, a second numeral signal following represents units." Thus: "Signal" 71 would mean 71,000, or "Signal" 71.454 means 71,454.

Q. How are time signals made?

A. By the use of the table in the General Signal Book, which gives a separate signal for each hour. The *minutes* are indicated by the numeral *below* the signal. To signal *seconds of time* a separate hoist must be made.

Q. How are date signals made?

A. In accordance with table in the General Signal Book.

Q. How are compass signals made?

A. By means of the table (see Battle Signal Book), which gives each degree of the compass (true).

Q. How are soundings reported?

A. By numeral signals in feet. The numeral flag above represents the number of feet when bottom was reached. The numeral flag below represents the depth reached with no bottom.

Q. How are boats recalled?

A. The *general recall* recalls all boats away. Each boat has a number, and the hoisting of this number over the general recall recalls that particular boat (see general and boat recall flag).

Q. How is a message made for sending?

A. Search in the General Signal Book, in alphabetical order, for one of the principal words of the signal it is desired to send. The signal letters will either be found in the next to left hand column abreast that word, or in the right hand column under "Reference."

Q. How would you look up a general signal that has been made?

A. Look in the left hand column of the General Signal Book for the group of letters in alphabetical order and abreast it will be found the message intended to be conveyed. If understood, "Answer"; if not, make "Interrogatory."

Q. What is meant by a repeating ship?

A. A ship which repeats signals between two other ships. Certain vessels are at times designated to repeat signals; besides it is a general rule that if a ship is in sight of two other ships which are trying unsuccessfully to communicate, whether because they are too far away, or because something else prevents, she shall repeat signals at once.

Q. How is a repeated signal indicated?

A. If repeated by any one except commander-in-chief of squadron or division, show the 1st repeater above the signal.

Q. How would you repeat a signal to a certain ship?

A. Hoist her call above the 1st repeater.

Q. If repeating a signal from a ship to flagship?

A. Hoist 1st repeater above the vessel's call.

Q. When a repeated signal is answered, what does repeating ship do?

A. Hoists answering pennant.

Q. When does she haul down signal and answering pennant?

A. When the original signal is hauled down.

Q. What tactical signals are repeated?

A. *All* tactical signals will be repeated by *all* the ships in the formation. In this case the repeater is not used.

DOT AND DASH CODE SIGNALS.

Q. What is the U. S. Navy Dot and Dash Code?

A. See Part II, "Z."

Q. What systems of Navy signaling are based on this code?

A. 1. Wigwag System.
2. Flashing or Occulting Light System.
3. Sound System.
4. The Ardois System.
5. Very System.

See Part II, "Z."

Q. How send a wigwag message?

A. To call a vessel or station, make its call until acknowledged. Then make "Acknowledgment" and proceed.

The flagship may call another ship by hoisting the latter's call half-way. When ready to read the message, the ship called hoists the answering pennant half-way; at the end of the mes-

sage the flagship should hoist the call to the yard arm, and the other ship should do the same with the answering pennant if the message is understood; otherwise she should hoist the interrogatory pennant.

The cornet hoisted half yard arm high is a call for the whole fleet to receive a semaphore or wigwag message. Any ship may be exempted by displaying her call *under* the cornet. All ships thus called will answer as prescribed above. The hauling down of the cornet or call, as the case may be, will be the acknowledgment of the answer.

In signaling, make a slight pause after each letter and in other than semaphore messages also after "Interval." If the sender discovers that he has made an error, he should make "A," "A," Interval, after which he proceeds with the message, beginning with the word in which the error occurred.

Q. How do you receive a wigwag message?

A. Stand at position, flag or torch vertical, facing sender; read each letter made. *All messages sent by any system will be recorded by a second signalman, or other person, as the words or characters are called out by the one reading (receiving) the signal. This rule is general. Never guess at a message* in which you have lost a few words. If you have a part of a word, immediately signal "repeat." Do not wait until message is complete and depend on guessing at the part lost. If the message is not perfectly clear, or if you think you may have made a mistake, signal repeat after last word you are sure of, "Repeat"; then last word you have received. It will seldom be necessary to "repeat whole message," if this rule is observed; but if you fail to "break" the sender immediately, after losing a part of the message, you will cause him unnecessary signaling. There is an exception to this rule in the case of a message addressed to several ships. If, in this case, an individual ship fails to understand a word, she shall not break in, but shall continue to read as much of the message as possible, and, after the whole message has been sent, request shall be made to the next ship, to the division commander, or to the commander-in-chief, to repeat the missing portion.

Q. How signal by sound in formation?

A. The flagship, desiring to send a signal, sounds "Cornet," or the desired call. Each ship in succession hearing it acknowledges by making . — . . — . "Interval" followed by her own call letters, beginning with the one next in formation. All ships then listen to the signal and endeavor to read and understand it. Those who do understand it shall acknowledge in their order in formation, beginning with the vessel nearest the

flagship, by signaling "acknowledgment" followed by their call. If any vessel notes that her next beyond in the formation does not acknowledge, she shall repeat the signal without delay. If, for instance, only the first ship heard it and understood it, she would repeat it to the next ship in formation, and so on. When the last ship of the formation has received the signal, her acknowledgment, followed by her call, shall be repeated from ship to ship back to the flagship. The repetition of this signal will be both an answer to the repeating ship and a call to the next ahead to repeat it on. The commander-in-chief will thus know that all his force understands the signal. If he gets back the answering call of some other ship, he knows just how much of his force understands the signal. The "Execute" is then sounded, to be repeated by each ship down the formation. For example, the flagship wishes to signal "Anchor." She would make "Cornet," which would be answered down the line as far as heard. She would then make the desired signal. This might be received and answered by four ships, which fact would be shown by the fourth ship acknowledging. As the fifth ship did not acknowledge, it would be the duty of the fourth ship to repeat the message.

Q. In case a vessel stops or backs without previous signal, what must she do?

A. Give toots for ten seconds in case of stopping and three blasts for backing.

Q. In case of vessel in formation changing course without signal, or at night or in thick weather, what must she do?

A. Blow one blast for a change to starboard, and two for a change to port.

Q. What are the general instructions for the use of the Very System?

A. Signals which require a change of formation, course, speed, order, or the execution of which must manifestly be simultaneous, shall be considered as *preparatory*, and shall not be executed until the "Execute" is made.

Stars should be projected nearly vertically and so as to fall in the direction of the unit addressed.

If the star is broken by shock of discharge the pieces shall be considered as one star.

If the receiver is led to believe that he has missed a star or that confusion of any kind exists, he shall at once make "Repeat." In such case the sender shall cease signaling, wait for about a minute, and then recommence the signal from the beginning.

On seeing a triple interval (RG) (RG) (RG), the receiver shall make "Answering" if the signal is understood, or "Repeat" if it is not understood.

SEMAPHORE SIGNALS.

Q. What are SEMAPHORE SIGNALS?

A. See Part II, "Z."

Q. How is the machine used for signaling with the two-arm semaphore?

A. The machine is mounted on the ends of the bridge or at some other available point, so situated that it may be seen through the greatest arc of the horizon. By means of electric lights installed on its vanes, the machine is made available for night as well as for day signaling. The vanes of the machine are painted yellow.

Q. What kind of flags are used for signaling by this system?

A. Hand flags, about 12 to 15 inches square, similar to alphabet flag P, or alphabet flag O, the one to be used depending upon the background, attached to a light wooden staff about two feet in length.

Q. What advantage has this method of signaling over the wigwag code?

A. It is the most rapid method of sending spelled-out messages. The motions, however, must not be slurred over or run together in the attempt to make speed.

Q. How is the interval made by the two-arm semaphore?

A. With the hand flags, interval, "end of word" is as shown in plates. Two successive motions are end of sentence, and three end of message. With the machine, the interval, "end of word" is the machine closed, but with the indicator showing. End of sentence is two successive "chop-chop" signals, both arms being placed at the right horizontal, and then moved up and down in a cutting motion, the indicator being displayed. The end of message is indicated by three successive chop-chop signals followed by closing of both arms and indicator.

Q. How signal by hand flags or machine?

A. (1) Face the station or ship squarely and make its call letter. If there is no immediate answer, wave the flags over the head, or wave the arms towards the vertical to attract attention, making the call letter at frequent intervals.

(2) The ship called answers by making its own call letter. With the machine, this call letter is left with the display fixed until the message has been received and understood, when the machine is closed.

(3) If, during a message, the receiving ship is for any reason unable to see the sender (flags or machine), the "interrogatory" will be hoisted to indicate the fact.

(4) A semaphore message for the whole force is indicated by the display of the cornet half yard arm high. Any unit or ship may be called in the same manner by the display of the proper calls.

Q. How is the semaphore signal repeated?

A. The second repeater, under a distinguishing pennant is a request to the ship indicated to repeat the message to the ship whose distinguishing pennant is shown below the repeater.

Q. How is the designator made by the semaphore?

A. All secondary meanings are made by holding the character for an appreciable time and agitating the arms or flags in that position, or by spelling out the word. Designator is made by use of the interval.

Q. How may a ship or other unit be exempt from a "call"?

A. By displaying its call under that of the larger force called.

Q. How call a ship or other unit for wigwag or semaphore signals?

A. (1) Signal its initial or call letter until acknowledged, or hoist its call at the yard arm. The acknowledgment consists in answering with the same call letter or letters; and, in the case of the two-arm semaphore machines, the call letter remains displayed.

(2) By day, a flagship may indicate that a semaphore spelled-out message is intended for a ship or other unit, or for the whole force, by hoisting half-way at the yard arm the appropriate call. This is answered by the ships called, by each ship hoisting the answering pennant half-way; but as in all other cases the answer should not be displayed until the receivers are ready with pencil and paper for recording the signal. When all ships called have answering pennants displayed half-way, proceed with the message.

(3) At the end of a message sent as prescribed in (2), the flagship hoists the call close up to the yard arm, and if understood, ships receiving do likewise with answering pennants. Flagship then hauls down as an acknowledgment of the answers and the ship or ships then haul down their answering pennants.

BOAT SIGNALS.

Q. What is the Deck and Boat Book?

A. (See page 609.)

Q. How could the flagship signal to boats of another ship?

A. By showing that vessel's call over the signal.

Q. How are boat signals made?

A. By any of the authorized signal systems.

Q. How is a signal made to a single boat?

A. By displaying the ship's call over that boat's number over the signal, though the ship's call may be omitted where no confusion would result.

Q. How are night signals made to boats?

A. Generally by wigwag code, using torch, lantern, or electric light system, the same as general signals.

Q. How are these signals answered?

A. By a hand lantern or by a Very's red star.

Q. In what order are ship's boats numbered? What is their distinguishing call?

A. Each ship's boats are numbered in the following order, beginning with No. 1: Power boats, sailing launches, cutters, whale boats, barges, gigs, and dinghies. This number over the general recall is the boat's distinguishing call.

Q. Where should the answering pennant be kept?

A. It should be kept with the Boat Book where it can be reached quickly in case a signal to the boat is made. The Boat Book and the answering pennant should not be kept locked up in the boat box, which is usually stowed away under the thwarts in an inaccessible place.

DISTANT SIGNALS.

Q. What are distant signals?

A. A system of signals made by balls, cones, and drums used to represent the figures and code calls. They are used as prescribed in the International Signal Book for signaling when too far to distinguish flags.

SPEED INDICATORS.

Q. What is the speed cone?

A. It is a canvas cone painted yellow on odd-numbered ships, and red on even-numbered ships, 2½ feet at base by 3 feet high, hoisted at yard arms by ships in formation.

Q. What do the different positions of the speed cone indicate?

A. (1) APEX UP. All the way up to yard arm: "Going ahead at standard speed."

About two-thirds way up to yard arm: "Going ahead at two-thirds standard speed." (It should show above the smokepipes.)

About one-third way up to yard arm: "Going ahead at one-third standard speed." (It should show well clear above semaphores, etc.)

(2) APEX DOWN. Hoisted part way to yard arm: "Engines backing."

All the way up to yard arm: "Engines backing full speed."

(3) The cone lowered out of sight: "Engines stopped."

Q. How indicate going faster than standard speed?

A. Hoist red pennant at yard arm with speed cone point up, which then means "Going ahead one knot or more faster than standard speed."

Q. What is meant by full speed?

A. A speed one knot greater than standard speed, unless specifically prescribed otherwise.

Q. When is the cone changed, to indicate change in speed?

A. As soon as the signal to change speed is sent to the engine room.

Q. Do you ever use two speed cones?

A. Yes, two speed cones are used on twin- or triple-screw vessels to indicate motion to each engine: (1) When directed by senior officer, particularly when entering or leaving a narrow harbor; (2) whenever the flagship uses two cones others will do so.

Q. Do you ever hoist answering pennant at same yard as speed cone?

A. No.

Q. On which side of a vessel is the cone hoisted?

A. On side toward guide.

Q. On which side of guide is the cone hoisted?

A. On side toward other vessels.

Q. Are changes of speed ever signaled by flagship by use of cone?

A. Yes. When flagship is leading and a temporary increase or decrease in speed is desired by commander-in-chief.

Q. What speed signals are shown at night by vessels in formation?

A. (1) If electric lights are fitted on trucks:

WHITE LIGHT. Steady light: "Going ahead at standard speed."

Single flashes: "Going ahead at one-third standard speed."

Double flashes: "Going ahead at two-thirds standard speed."

RED LIGHT. Steady light: "Stopped." (In Emergency, toots for 10 seconds with steam whistle also.)

Single flashes: "Engines backing." (In Emergency, three blasts with steam whistle also.)

Double flashes: "Engines backing full speed." (In Emergency, three blasts with steam whistle also.)

(2) If only oil lanterns are available:

One white lantern at the yard arm: "Going ahead at standard speed."

One white lantern at the yard arm and another half-way up: "Going ahead at two-thirds speed or less."

One red lantern at the yard arm: "Engines stopped." (In Emergency, toots for 10 seconds with steam whistle also.)

One red lantern at the yard arm and a white lantern half-way up: "Engines backing." (In Emergency, three blasts with steam whistle also.)

Q. How is speed indicated to a vessel following in formation, when it is desired that no lights be visible outside of the formation?

A. By the "screened speed and steering light."

Q. Describe this light.

A. It is a specially constructed light installed on the rail aft, capable of being so screened as to show through only a small arc and to be so projected as not to be discernible outside of the formation; contains a red and a white lamp capable of being manipulated in the same way as the regular night speed indicator to indicate Going Ahead, Backing, etc.

This light may be combined in a specially constructed lantern with the "Stern" light.

SPECIAL LIGHTS.

Q. What lights in addition to speed lights are shown at night by naval vessels?

A. (1) When under-way at night in formation, each ship carries a white light on rail aft, showing from right astern to four points on each quarter. This is the "overtaken vessel" light required by the "International Rules for Preventing Collisions."

(2) All flagships in port or at sea, when in company with other ships, carry a white "top light."

(3) At night, in approaching an anchorage where other men-of-war are likely to be found, vessels hoist at the peak two white lights in vertical line. United States vessels of war are required to answer such signals from an incoming vessel by hoisting same display.

(4) When at anchor in port, a vessel of the U. S. Navy is required to display at her peak a white light when her captain

is absent at night, with the intention of returning within twenty-four hours.

(5) A flagship displays a hoist of three white lights (for a rear admiral) at her peak when the flag officer is absent at night, with the intention of returning within twenty-four hours.

(6) The guard vessel displays a red light at fore truck at night (from sundown to daylight).

Q. When are speed lights extinguished?

A. The moment the anchor is dropped they are turned off and anchor lights turned on.

Q. Can truck lights be used for signaling?

A. No; they are not intended for that purpose; they are intended only for the speed signals and for special exceptional cases.

MAN OVERBOARD.

Q. What is done at "Man overboard" in formation?

A. In a case of a man overboard, by day, the Breakdown flag is broken and half-masted, but not below the level of the top of the smoke-pipes. If in fleet column or minor columns well separated, all ships astern of the ship losing the man likewise break and half-mast the Breakdown flag and they and the ship losing the man stop their engines, toot their whistles, and change their course 10 degrees, unless in narrow waters, odd-numbered ships to starboard, even-numbered ships to port; they are then in a position to back their engines if necessary; the two ships next astern, and others if advisable, lower their lifeboats to assist in the search. Ships ahead of the one losing the man stand on, unless otherwise directed by the commander-in-chief or the division commander. If in any formation other than fleet column or minor columns well separated, ships that are in the squadron having the man overboard, or in a squadron or division astern of it, break and half-mast the Breakdown flag, and stop and hold their course. Ships not required to stop by these instructions stand on, unless otherwise directed by the commander-in-chief or division commander.

At night, besides making the "Man overboard" signal, the ship having "Man overboard" fires a signal gun, which, as well as the "Man overboard" signal, shall be repeated by all those astern. Ships then maneuver as prescribed for the daytime. When the man has been picked up or the search abandoned, "Affirmative" is made by each ship (except the flagship of the senior officer) to indicate when she is ready to go ahead.

INTERNATIONAL SIGNALS.

NOTE.—These must not be confused with the signals contained in the General and other Signal Books of the Navy.

"CODE FLAG" AND "ANSWERING PENNANT."

When used as the "Code Flag" it is to be hoisted under the ensign.

When used as the "Answering Pennant" it is to be hoisted at the masthead or where best seen.

Q. What are the INTERNATIONAL SIGNALS?

A. A set of signals which have been adopted by all nations in order that all ships may have a method of signaling to each other.

Q. How many flags and pennants are used?

A. Twenty-six flags and pennants, one for each letter in the alphabet, and a code pennant which is also used as an answering pennant.

Q. Describe flags.

A. The flags and pennants are the same as the alphabet code flags and pennants and are illustrated in Part II, "Z."

Q. How is the International Code used?

A. Any particular hoist has the same meaning in every language. Look up signal in International Signal Book. Take letters abreast signal, bend on flags, reading from top down. When making signal, hoist code pennant under ensign. Hoist signal where it can best be seen. If receiving message, its meaning is found abreast letters represented by flags in hoist.

The following instructions show in a general way the signification of an International Signal:

Show the ensign and the answering pennant under it when necessary to show that this code is used.

If the signal is intended for a particular ship or a signal station, refer to the attention signals page 1, Part I, of the International Signal Book. Hoist the signal where it will be best seen. The proper signal to hoist may be easily found by reference to Part II. In Part I, the principal signals bearing on the same subject are arranged in groups. A separate geo-

graphical index is at the end of Part II. Arrangement of flags gives distinctive character to signal, thus:

(a) *One-flag signals.*—B, C, D, L, P, Q, S, hoisted singly, have special significations. The code-flag over each of the signal-flags are signals of a general nature, of most frequent use. Signal-flags hoisted singly after *numeral-signals No. 1* refer to the numeral-table, as do also *two-flag signals* with code-flag *under* them.

(b) *Two-flag signals* without code-flag are urgent and important signals; with code-flag *over* them are latitude and longitude, time, barometer, and thermometer signals.

(c) *Three-flag signals* express points of compass, money, weights, and measures, and all ordinary signals required for communication.

(d) *Four-flag signals* with a burgee (A or B) uppermost are geographical signals: with C uppermost are spelling or vocabulary signals; with G uppermost are names of men-of-war; with square flag uppermost are names of merchant vessels and are not in Signal Book.

Q. How read a four-flag hoist with square flag on top?

A. If the vessel flies a U. S. flag it will be found in list of U. S. merchant vessels. Naval vessels are usually not supplied with merchant lists of foreign nations, and therefore the vessel cannot be generally made out; there can, however, be no doubt as to its meaning.

GENERAL NOTES ON SIGNALS.

Every man belonging to the Seaman Branch should be familiar with signals. Boatswains' mates, coxswains, quartermasters, and signalmen must be at all times expert to the extent that they can read a properly sent message correctly. The questions given above cover, generally speaking, the entire subject of naval signals.

Should a cipher message be received, great care must be taken to receive and record every letter exactly as it is sent, as every individual letter is important.

In all signaling, skill and rapidity must always be regarded as entirely secondary to accuracy, though after accuracy has been obtained, the *relative* skill of signalmen is shown by the rapidity with which they can accurately receive messages.

Never answer a signal until its *meaning has been understood.* It is a reflection on the signalmen of a ship to acknowledge a signal, then afterward to find out that it was not understood and hoist the interrogatory. In all signals exercise great care with

every detail. Care and efficiency in signals is always noticed, as is also poor and incorrect signaling. In flag signals celerity in hoisting and hauling down is secondary only to accuracy. Never hoist a signal until everything is ready, then "up with a run." The moment the answering pennant is broken, "down with a run." As a rule, this can easily be done if care is taken to guide flags clear of rigging in hoisting. Hand-over-hand hoisting is slow. Reeve halliards through a snatch block or even around a brass rail and run away with it both up and down.

In using the wigwag flag be careful to face receiver. Use flag only sufficiently large to be clearly seen. Always get a clear (sky) background if possible. Make movements quickly with *decided pause* between each letter. Motions for Dot and for Dash are 90°, not all the way to the ground. Keep flag clear, by exercising care, not by continually stopping to clear it. If you miss a word in wigwag, signal "Repeat last word." It is no reflection on a signalman to break a message, and it is a poor signalman who guesses at an unknown word in a message and who allows the sender to complete a message and then asks him to repeat it.

SIGNALS OF LIFE-SAVING SERVICE.

(1) The following signals, approved by the International Marine Conference, convened at Washington in October, 1889, have been adopted by the life-saving service and will be used and recognized by the officers and employees as occasion may require:

(2) Upon the discovery of a wreck by night, the life-saving force will burn a red pyrotechnic light or a red rocket to signify: "You are seen; assistance will be given as soon as possible."

(3) A red flag waved on shore by day, or a red light, red rocket, or red Roman candle displayed by night will signify: "Haul away."

(4) A white flag waved on shore by day, or a white light slowly swung back and forth, a white rocket, or a white Roman candle fired by night, will signify: "Slack away."

(5) Two flags, a white and a red, waved at the same time on shore by day, or two lights, a white and a red, slowly swung at the same time, or a blue pyrotechnic light burned by night will signify: "Do not attempt to land in your own boats. It is impossible."

(6) A man on shore beckoning by day, or two torches burning near together by night, will signify: "This is the best place to land."

(7) Any of these signals may be answered from the vessel as follows: In the daytime, by waving a flag, handkerchief, a hat, or even the hand; at night, by firing a rocket, a blue light, a gun, or by showing a light over the ship's gunwale for a short time and then concealing it.

STORM SIGNALS.

The various civilized nations of the world give warning to mariners of the approach of storms. These notices are received by telegraph at various stations along the coast and indicate the approach of storms and the expected direction of the wind. In the United States the system of weather-signals is very complete, information of the approach of storms being received from various stations in the United States and even throughout the West Indies. These warnings are published at the various seaports by the display of flags by day and by lanterns at night, also by bulletins and reports furnished to newspapers. Every effort is made by the United States Weather Bureau to give these warnings as early as possible at all points where they may be of service to mariners and others.

UNITED STATES STORM SIGNALS.

(1) *The signal warnings* are as follows:

Small craft. NE. winds. SE. winds. SW. winds. NW. winds. Hurricane

Flags 8 feet square. Pennants 5-foot hoist, 12-foot fly.

EXPLANATION.

(2) *Storm signals* are displayed by the United States Weather Bureau at 141 stations situated on the Atlantic and Gulf coasts of the United States from Eastport, Maine, to Brownsville, Texas. The stations at Cape Henry, Jupiter, and San Key, Florida, are equipped for signaling by the Inter-

national Code, and are prepared to transmit by telegraph the messages of passing vessels.

(3) *Storm Warning Flags.*—

(a) A red flag, with a black center, indicates that a storm of marked violence is expected.

(b) The pennants displayed with the flags indicate the direction of the wind; red, easterly (from northeast to south); white, westerly (from southwest to north). The pennant above the flag indicates that the wind is expected to blow from the northerly quadrants; below, from southerly quadrants.

(c) By night a red light indicates easterly winds, and a white light above a red light, westerly winds.

(4) *Hurricane Warnings.*—

(a) Two red flags, with black centers, displayed one above the other, indicate the expected approach of tropical hurricanes, and also of those extremely severe and dangerous storms which occasionally move across the lakes and northern Atlantic coast.

(b) Hurricane warnings are not displayed at night.

PART THREE

GUN CAPTAINS

PART THREE.

GUN CAPTAINS.

Q. Do gun captains receive extra pay?

A. Enlisted men of the Navy and marines who are regularly detailed by the commanding officer of a vessel as gun captains, except at secondary battery guns, receive, in addition to the pay of their respective ratings, $5 per month. In the case of men who hold certificates of graduation from the gun-captain class of the petty officers' school, this $5 includes the $2 per month to which such certificate entitles them.

Q. What examination is necessary before a man can be regularly detailed as gun captain in the above sense (that is, with extra pay)?

A. He must be examined and recommended by a board of 3 ordnance or division officers—exclusive of his own division officer, if practicable—appointed by the commanding officer to determine his fitness for the position; but this does not prevent the detail of any desirable member of a gun crew as acting gun captain, though such detail shall carry with it no extra pay. Such details are necessary in order that, prior to their examination, candidates may have had actual experience in their duties in this capacity.

Q. In order that he may draw his extra pay, what station must a gun captain occupy?

A. After he has been recommended by a board of officers as specified above, he must be regularly detailed as captain of some individual gun of the main battery. If, however, the arrangement of the ship's battery is such as to render necessary the detail of one gun captain to a group of guns, as for example, when a number of guns are more or less isolated and require a responsible person in charge, a man may be detailed as gun captain of the group of guns, permitting an acting gun captain to relieve him at his own gun. In no case will the number of men on board who draw extra pay as gun captains exceed the number of guns of the main battery on that vessel.

Q. What duties has a gun captain in addition to his duties at his individual station at the gun?

A. He is in charge of that gun and the gun's crew. He must not regard his duties as merely perfunctory. He gets extra pay

for his services as gun captain. He should have the same relation to his gun and gun's crew that a coxswain has to his boat and boat's crew.

Q. What general knowledge should a gun captain have?

A. He is responsible to the division officer for the good condition of gun, mount, and appurtenances, and for the drill of his particular crew. He should have:

(a) A thorough practical knowledge concerning his gun, mount, accessories and ammunition, and the ammunition supply for his gun.

(b) The ability to take charge of, drill and instruct his gun's crew in practical details concerning his gun, without the supervision of an officer.

(c) The executive ability to handle a crew of men, make them perform every detail of the drill, and maintain their parts of the gun and mount in excellent condition.

His duties in the instruction and development of the crew have to do very much more with the development of its practical skill in serving and firing the gun than with its theoretical instruction.

He has immediate charge of the exercises with the mechanical devices provided for training the crew, and should clearly understand their purpose and the object to be attained.

As he is responsible to the division officer for the practical development of his crew, he should bear in mind that it is his duty to get out of the crew the very highest performance of which it is capable.

Q. What must a gun captain remember about insisting upon the minor details of drill?

A. He must, in all exercises with the various devices for training the gun's crew, as well as at actual drill at the gun, insist on the careful observance of all the minor details of the drill, bearing in mind that any drill that is carried out without observing every detail which it would be necessary to observe in actual firing, or without striving to attain as great a rapidity as will be sought in target practice or in action, is actually harmful to the gun's crew.

Q. In addition to the subjects prescribed for ordinary seamen and seamen, in what subjects must a candidate for gun captain be examined?

A. In the following subjects. As details in regard to individual subjects may vary so greatly for various types of guns, it is the intention here merely to give hints and suggestions in regard to the best method of obtaining information under each heading.

"A-G." ABILITY TO STATION AND DRILL A GUN'S CREW.

This will depend absolutely on the candidate. He must be keenly observant at every drill. He must have sufficient ability in handling men to make sure of the fact that the men understand their duties and render implicit obedience.

"B-G." THOROUGH KNOWLEDGE OF THE SAFETY PRECAUTIONS TO BE OBSERVED IN THE SERVICE OF THE GUN AND OF THE METHOD OF PROCEDURE IN CASE OF A FAILURE TO FIRE.

All these safety precautions are given in the "Naval Instructions, 1913," Articles 2851 to 2876 inclusive. Your division officer has a copy of these instructions. One article of the Instructions requires that "Copies of all safety orders and instructions pertaining to the armament of the ship shall be kept posted in convenient places easy of access to members of the crew, and all members of the crew concerned shall be thoroughly instructed in them."

"C-G." ABILITY TO BORE SIGHT THE GUN AND ADJUST THE TELESCOPE.

Much may be learned in regard to this subject by paying careful attention when your gun is bore sighted. This is done before and after target practice. Bore sighting is the adjusting of gun sights, when the sight bar is set for zero range and the deflection drum for zero deflection, so that the line of sight of the pointing telescope will intersect the axis of the bore of the gun at the mean range at which it is expected to fire. Notes on bore sighting and adjusting the telescopes are given in "Gunnery Instructions, U. S. Navy, 1913."

"D-G." FAMILIARITY WITH THE TELESCOPE SIGHTS OF THE GUN, INCLUDING THEIR CARE, THE PRECAUTIONS TO BE OBSERVED IN THEIR USE, AND THEIR MOST PROBABLE DERANGEMENTS.

The Bureau of Ordnance issues a number of pamphlets in regard to matériel. These pamphlets are supplied to ships. Those covering the subject of telescopes are numbered 345 and 349. Much information may also be obtained from "Ship and Gun Drills, U. S. Navy."

"E-G." ABILITY TO SHIFT AND ADJUST THE GAS-COCK PAD AND BREECH MECHANISM.

Completely covered in the pamphlets on the subject of "Breech Mechanisms" issued by Bureau of Ordnance. Practical knowledge may be obtained from the gunners' mates of your division.

"F-G." A PRACTICAL UNDERSTANDING OF THE GENERAL TERMS USED IN ORDNANCE AND GUNNERY.

"G-G." A THOROUGH FAMILIARITY WITH THE MOUNT AND ABILITY TO ADJUST SUCH PARTS AS REQUIRE ADJUSTING FROM TIME TO TIME.

This, too, is thoroughly practical. This knowledge may be obtained by watching the gunners' mates of the division in their routine work.

"H-G." A READY KNOWLEDGE OF HOW PROPERLY TO DIRECT THE CHANGES TO BE MADE IN THE RANGE AND LATERAL COMPENSATION IN ORDER TO MAKE HITS AGAIN AFTER THE SHOTS HAVE BEGUN TO FALL OFF THE TARGET.

This involves a knowledge of the elementary principles of spotting which is a science in itself. Spotting is discussed in detail in the "Gunnery Instructions, U. S. Navy, 1913." To render intelligent answers to questions under this heading, the candidate should have access to a Range Table of the particular gun at which he is stationed. These tables are published in pamphlet form by the Bureau of Ordnance and issued to the various ships. The principal information to be taken from the Range Tables in this connection consists of the Danger Space at various ranges for a given target; how much change is made at the target at various ranges by raising the sight-bar 100 yards; the amount the projectile is moved to the right or left on the target by moving the deflection scale one division to the right or left.

"I-G." A THOROUGH KNOWLEDGE OF THE FIRING CIRCUIT, WITH ABILITY TO DETECT AND REMEDY LOCAL DEFECTS.

This involves a knowledge of elementary practical electricity; but it also depends a good deal on common sense. Briefly, there are two methods of firing a gun electrically; by motor generator and dry battery. Two sources of current thus reduce the chances of having to resort to firing by percussion. The division officer decides which method of firing he desires to use, but both methods must be available. To provide for this, the first essential is the cleanliness of all connections. Wipe off all connections with alcohol or gasoline to free them from dirt or grease, connect up leads and ring through with a magneto. See that every connection in the circuit is clean and secure and thoroughly tape them all.

"J-G." KNOWLEDGE OF THE METHOD OF RECEIVING RANGES AND BATTLE ORDERS.

This will, of course, be a matter of observation. Ranges and battle orders may be sent by 3 different methods: (1) By electric visual transmitters from central station. One of these instruments is placed where it can be easily seen by each sight-setter; (2) by telephone, and (3) by voice tube, in case of failure of the first two methods.

The visual and telephone are used together; and it is most important that the ranges and orders sent by each of these

methods should be identical. Consequently, it is necessary to make frequent checks of the visuals.

"K-G." ABILITY TO RIG AND ADJUST MORRIS-TUBE, DOTTER AND SUB-CALIBER APPARATUS, AND SUPERINTEND THE TRAINING AT THEM.

These devices are used so frequently that it should be a simple matter for anyone who has a gun-station to be able to learn all about them. In the adjustment of Morris-tube and sub-caliber there is nothing complicated, although the adjustment of the dotter sometimes requires perseverance. Instructions are laid down in "The Gunnery Instructions, 1913," but practical experience can be easily obtained because these devices are used so frequently. To superintend the training at these devices a man must have executive ability and the power to control men; in fact, just the qualities that are essential in a gun captain for general training.

The board examines a candidate for gun captain in each of the above subjects, and submits a report to the captain wherein they give a man's mark in each subject, and state whether they do, or do not, recommend him for appointment. In marking, 5 is excellent, 4 very good, 3 good, 2 fair, 1 indifferent, 0 bad. This scale of marks is used in all examinations of enlisted men for advancement in rating, as well as for the quarterly marks on the service records.

A seaman who is qualified for gun captain *generally* possesses the qualifications that will entitle him to promotion to petty officer, third class.

NOTE.—Much valuable information for men preparing for examination for gun captain will be found in the chapter for Gunners' Mates.

PART THREE

PETTY OFFICERS

PART THREE.

PETTY OFFICERS.

THE SPECIAL SUBJECTS WHICH ALL PETTY OFFICERS OF THE SEAMAN BRANCH SHOULD KNOW.

1. All petty officers of the seaman branch, irrespective of rating, must have a thorough knowledge of subjects "A" to "Z" inclusive and subjects "S-1" to "S-11" inclusive.

2. They must have a knowledge of the duties and responsibilities of petty officers as a class.

3. In examining a man for the rating of petty officer the examining board will take great consideration of the manner in which he performs his duty, in addition to his general knowledge.

4. Petty officers must realize that military discipline exacts the necessity for requiring absolute and prompt obedience of every order.

5. They must know what duty is expected of them when detailed for guard and patrol duty. They must thoroughly understand the rules and regulations regarding the manner of performing that duty.

6. They must know the order of precedence of petty officers and they must answer all questions relating to their duties as petty officers irrespective of their specialty.

7. There are a number of drills that should be thoroughly understood by all petty officers of the seaman branch. They should know how to conduct setting up drill, to drill a squad of infantry, to handle a boat under oars or sail.

HINTS FOR PETTY OFFICERS.

Q. What qualities govern the rating of petty officers?

A. Petty officers are men rated for their *superior knowledge* and their *ability in handling men.*

Q. What is the general duty of a petty officer?

A. To assist the officers of a ship to promote the efficiency of the ship in every way.

Q. In what general subjects should they instruct and direct men below them?

A. In their duties, in the customs of the service, in its established routine and in naval discipline.

Q. Is a petty officer paid a larger salary than a seaman because he is expected to perform extra manual labor?

A. No. *He is paid for his knowledge and his ability to superintend and direct the work of those placed under him.* He must make himself perfectly familiar with all the duties of his rate and he should be prepared to fill a temporary vacancy in the next higher rate. He must be able to give correct and intelligent instruction to men of lower ratings in all their duties.

Q. What interest should he take in the ship?

A. A petty officer should at all times take the same interest in the appearance, condition and efficiency of the ship and in the performance of any duty with which he is charged as an officer on shipboard.

Q. What are his duties toward his seniors and subordinates?

A. In the same manner that he must at all times be respectful and obedient to his seniors, so must he exact discipline and obedience from those under him. He should at all times correct lubberly and untidy habits of other members of the crew. The direct handling and instruction of the crew falls to the petty officer and he is clothed with the necessary authority for that purpose. He should be an example to the other members of the crew, never forgetting that the superior knowledge and experience he possesses, together with his manner of performing duty and his attention to details, are powerful factors in determining his influence and his ability to demand obedience.

Q. How do petty officers take precedence?

A. According to the following classification: *Petty Officers, first class;* Masters-at-arms, first class; Boatswain's mates, first class; Turret captains, first class; Gunner's mates, first class; Quartermasters, first class. *Petty Officers, second class;* Masters-at-arms, second class; Boatswain's mates, second class; Gunner's mates, second class; Quartermasters, second class. *Petty Officers, third class;* Masters-at-arms, third class; Coxswains; Gunner's mates, third class; Quartermasters, third class.

Q. How is the precedence of two or more petty officers holding the same rate determined?

A. By the date of the rates; the man who has been longest in the rating takes precedence.

Q. Suppose the rates are of the same date, who takes precedence?

A. The man who has the greatest length of service to his credit.

NOTE.—The precedence of petty officers of Special and Artificer Branches is given in Part V.

PETTY OFFICERS AS A CLASS.

Whether you are a master-at-arms, a boatswain's mate, a turret captain, a gunner's mate, or a quartermaster, remember that your *first specialty is that of being a petty officer.* The rating badge has been awarded you because you have shown that you possess superior knowledge and the ability to handle men; it carries with it many duties and responsibilities but it gives authority and privilege as well. That rating badge has a "specialty mark," it may be the star, fouled anchors, crossed guns, or a wheel. But this specialty mark is secondary in importance to the insignia of a petty officer in the Navy, the eagle and the chevrons. In addition to the stripes on his sleeve, an officer wears a corps device on his collar, but the stripes on the sleeve are the insignia of an officer of the Navy. Irrespective of his corps, an officer, whether he is of the line or the staff, has certain duties as an officer of the Navy and he constantly bears these duties in mind.

It would often be well if a petty officer could forget, for a time, his "specialty mark," and remember only the fact that he is a petty officer. Unfortunately there is too often a tendency to shirk responsibility. A boatswain's mate of a division, for example, at the conclusion of the day's work may have a self-satisfied feeling that his work has been well done. His part of the ship may have passed a very creditable inspection and won credit for his division. After working hours an ordinary seaman of the division commits a deliberate offense against Navy regulations and discipline. If the offense involves the dirtying of his part of the ship, the boatswain's mate is the first to exercise his rights as a petty officer and insist that discipline be maintained. But it often happens that the boatswain's mate will look the other way or even openly approve some other infraction of regulations. He argues that his duty for the day is over, and that this is a case for the master-at-arms, who may not be in the vicinity. No matter how efficient a section or how clean a part of the ship that boatswain's mate has, he is neglecting his *duty as a petty officer* in overlooking this infraction of regulations.

Masters-at-arms sometimes shirk responsibility in a different way. Although a master-at-arms is a petty officer of the seaman branch, it too often happens that, even during recreation hours, he does not appear above the gun deck. Many a master-at-arms spends all his time in a compartment supervising the scrubbing of paint work. If his division officer even suggests the idea of giving him a gun station, his astonishment and suppressed indignation are without limit. There are some masters-at-arms in

the Navy who, were they told to drill a whaleboat's crew under oars, would not be able to put up as creditable a performance as an intelligent fireman. And yet a master-at-arms is a petty officer of the *seaman branch*. In the old days a master-at-arms was so called because one of his duties—and a most important one—was the instruction of the crew in the use of small arms. To-day if a master-at-arms were ordered by his division officer to drill a squad of men for a period of ten minutes one day in a month, the conclusion of the drill period might find the chief master-at-arms protesting to the executive officer. Masters-at-arms should take pride in the fact that they have some practical knowledge of the duties of petty officers of the seaman branch. They should not shirk such duties when called upon to perform them.

It is believed that in time of action, with its ensuing casualties, petty officers would think less of their specialties, rise to meet every emergency, and do their duty as petty officers; petty officers of all specialties pulling together and helping one another out instead of protesting loudly against being called upon to perform some very trivial detail which they may consider to be outside their specialty. And to meet the contingencies of battle, the more that petty officers of the seaman branch know about each other's duties, the better. Such knowledge is not hard to obtain when it is realized that all these men were once specialists in one great profession—once they were all seamen. The trouble is that in following their "specialty," a number of them have forgotten how to be good seamen.

Until quite recently there was no master-at-arms in the complement of a torpedo-boat destroyer. The result was that, much to their surprise, dozens of boatswain's mates and gunner's mates found themselves becoming proficient in the hitherto mysterious duties of a master-at-arms. They were enforcing discipline in the crew and doing their *duty as petty officers* as well as "specialists."

Perhaps the establishment of the SHORE PATROL has done more than any other one institution to make petty officers realize their duty as a class. As a rule, they have all, irrespective of specialty, worked together in insuring the proper conduct of liberty men and winning respect for the uniform on shore in foreign ports and at home. It is most important that a candidate for examination as petty officer thoroughly understands the details of this duty; consequently, the following questions and answers are given in regard to it.

Q. What is the SHORE PATROL?

A. It is the force landed from the ships of the fleet to maintain order among liberty men.

Q. What is its composition?

A. Unless otherwise directed, it is composed of four line petty officers from each ship. The men from the ships of any one division are usually under the command of a line officer of that division and a junior officer.

Q. What is the first duty of the petty officers of the patrol after landing?

A. To become acquainted and familiar with each other by sight, name and rating so that they may work together efficiently.

Q. What is the duty of the patrol?

A. To patrol those parts of the town which liberty men most frequent, and to preserve order. Any drunken or disorderly man must be arrested at once and sent on board his own ship. The patrol officer will make a written report in each particular case. If you are on patrol duty and make an arrest you must use every effort to get all the facts of the case absolutely straight.

Q. What are the instructions about obeying the orders of the shore patrol?

A. It shall be considered a *most serious offense* for any person to resist or fail to obey the orders of the shore patrol.

Q. What are the instructions in regard to the use of intoxicants on the part of the shore patrol?

A. No person on duty with the shore patrol or beach guard shall, at any time, or under any circumstances, partake of or indulge in any form of intoxicating liquor or other intoxicant while on such duty. Violation of this instruction is a general court-martial offense.

Q. What is the uniform of the patrol?

A. The uniform of the day, leggins and rifle belts. The patrol will carry night sticks unless directed not to do so.

Q. You are a member of the shore patrol. You find an enlisted man drunk and raising a disturbance, what do you do?

A. Arrest him at once. If you are unable to get him to the headquarters of the patrol (usually a police station of the town), telephone to headquarters for assistance. The police usually extend all possible privileges and assistance to the patrol.

Q. Even if you were not detailed for duty with the patrol, why should you see that such a man is reported to the patrol and arrested?

A. Whether you are ashore on duty or on liberty, it is your duty as a petty officer to take such action. A man in this condition is disgracing the uniform that you wear. A few men

of this character may bring discredit upon the entire Navy. It is your duty to report such a man in self-defence as well as from a sense of duty as a petty officer.

Q. What are the regulations governing the advancement in rating of petty officers?

A. No man is advanced in rating more than one class at a time, except by special authority, in each case, from the Bureau of Navigation. A petty officer must complete the full probationary service of 12 months before being given an appointment in a higher rating. When necessary, owing to vacancies, a man, if qualified, may be given the duties of a rating higher than the one he holds, but this does not entitle him to the pay of the higher rating. So far as possible, petty officers are selected from continuous-service men. When a man is selected for the position of petty officer, the captain issues to him an appointment which may be revoked at any time by the commanding officer of the ship on board which he is serving should the petty officer prove not qualified for the position he may be holding. When a petty officer holding an appointment in any rating is advanced to the next higher rating, he is given an appointment in that rating, and is required to serve under such appointment during the probationary period of 12 months. A petty officer holding an appointment in any rating, if transferred to another rating in the same class, is given an appointment in that rating, and required to serve during the probationary period of 12 months.

PART THREE

MASTER-AT-ARMS

PART THREE.

MASTER-AT-ARMS.

IN ADDITION TO THE SPECIAL SUBJECTS PRESCRIBED FOR ALL PETTY OFFICERS, MASTERS-AT-ARMS MUST BE THOROUGHLY FAMILIAR WITH THE SUBJECT "m-1," THE DUTIES OF A MASTER-AT-ARMS ACCORDING TO THE NAVY REGULATIONS.

Q. Who is the chief of police of the ship?

A. The senior master-at-arms. The other masters-at-arms are his assistants.

Q. What is his general duty?

A. To keep strict surveillance over the conduct of the crew.

Q. What is his duty in regard to messes?

A. He has charge of the messes, and is directly responsible that order is maintained.

Q. In regard to the preservation of order?

A. He must use his greatest efforts to keep order, insure cleanliness and prevent any infractions of discipline in all parts of the ship.

Q. In regard to reports?

A. When necessary, he is to arrest offenders and report at once to the officer of the deck or to the executive officer any violation of the regulations.

Q. In regard to prisoners?

A. He has charge of all prisoners. He is not to allow them to escape, nor to dismiss them without orders from the proper authority.

Q. Under what special circumstances is he justified in releasing prisoners without orders?

A. In case of serious fire, or of any sudden danger whereby the safety of the ship is imperiled, and *when time will not permit of a reference to superior authority.* In case he takes such action, he must report the fact immediately to the officer of the deck.

Q. How often must he visit prisoners?

A. At least once every 4 hours during the day, and oftener if necessary, to find out their condition and needs.

Q. What other instructions are there in regard to prisoners?

A. While the senior master-at-arms, aided by all the junior masters-at-arms, must suppress disorder among the prisoners

and report all delinquents, he shall be reasonable and not unduly severe in his demands.

When confining prisoners he shall take care to have sufficient assistance at hand. He must always be ready, so far as possible, to confine additional prisoners.

Q. Who performs the duty of the senior master-at-arms in his absence?

A. The master-at-arms next in rank. If there is no junior master-at-arms, someone is designated to act in that capacity.

Q. What are the duties of the senior master-at-arms in regard to the effects of the absent and the dead?

A. 1. He shall take charge of the effects of all absent and deceased members of the crew and hold them until disposed of by order of superior authority.

2. He shall take charge of the bag and hammock of any man who is absent without leave, reporting his action to the executive officer.

3. He shall take charge of the effects of liberty men, when so directed.

4. He shall be present at the sale of effects of deserters and deceased persons.

Q. Give detailed instruction in regard to the care of the lucky bag and of deserters' effects.

LUCKY BAG.

A. All clothing and other articles found adrift about the decks will be placed in the lucky bag, under the charge of a master-at-arms.

It is customary to allow the owners of regulation clothing or articles not contraband to claim them during the noon meal hour.

Nonregulation clothing or contraband articles will not be given up from the lucky bag.

Reports against persons having articles in the lucky bag will be made by the senior master-at-arms in accordance with the instruction that may be prescribed by the executive officer.

One morning each week will be designated for the inventory of the lucky bag. The senior master-at-arms will witness this inventory, and he will post a list giving the names of owners, if possible, and description of all non-contraband articles and regulation clothing. He will also furnish the executive officer a list of all contraband articles and nonregulation clothing, giving names of owners, if possible. The executive officer will issue orders as to their disposition.

All articles not claimed before a designated hour of the day of the inventory will be disposed of as the executive officer may direct.

If the owners can be identified they will be required to take charge of all regulation clothing and noncontraband articles and will be placed on the report.

DESERTERS' EFFECTS.

The senior master-at-arms shall take charge of all the effects of deserters. They will be kept separate from the "lucky bag clothing."

The officer of the division to which the man belonged inventories the effects. After this inventory the senior master-at-arms sees that each article is stamped indelibly and legibly with the letters "D. C." The articles will then be sealed and turned over to the pay officer.

It is customary to sell deserters' effects at auction to the highest bidders. This is usually done on the day the man is declared a deserter.

The senior master-at-arms and a responsible person attached to the pay division are required to be present at this sale.

The name of every man who buys an article of deserters' effects, the name of the article, together with the price paid, should be recorded and kept in the records of the pay officer.

The senior master-at-arms also keeps a permanent record of the names of purshasers and the names of the articles purchased.

No man may buy articles that do not form a part of his uniform. A marine cannot buy naval clothing, nor can any man of the Navy, except a bandsman, buy marine clothing.

EFFECTS OF DECEASED MEN.

The senior master-at-arms shall take charge of the effects of deceased men. The officer of the division to which the man belonged will then inventory and seal such effects. They will then be turned over to the pay officer, for safe keeping, until such times as they are disposed of as directed by the executive officer, in accordance with the Navy Regulations. Perishable articles will be disposed of as directed.

EFFECTS OF MEN GOING ON LEAVE.

The senior master-at-arms shall receive the effects of men going on any extended leave, and shall be responsible for their safe keeping.

Q. Give detailed instructions in regard to prisoners and stragglers.

The following instructions are taken from the order book of a battleship of the Atlantic Fleet:

PRISONERS.

Prisoners will wash clothes every morning on deck, whenever scrubbing clothes is allowed, under the charge of a master-at-arms. Then they will be policed.

They will wash in the wash room between 6.15 and 6.30 each morning under the charge of a master-at-arms.

At 11 A. M. all prisoners will be policed.

At 2.30 P. M. all prisoners who have been over 5 days in confinement, will be taken on deck for one hour's exercise, Wednesdays and Saturdays excepted.

On Saturdays and Wednesdays, between 2.30 and 3.30 P. M., all prisoners will bathe.

At 7. P. M. all prisoners will be policed and get bedding. Also they will get dirty clothes to be washed the next morning.

On Sunday afternoons prisoners will be permitted to write letters. Permisson must be obtained from the executive officer.

The master-at-arms in charge of prisoners during the morning watch will be responsible for the clothes that prisoners may have on the line at "Pipe down."

Prisoners will not be allowed to have with them in the place of their confinement any clothes in excess of their actual needs, nor any other articles except toilet gear, nor will they be permitted to hang anything except towels in the vicinity of the prison spaces.

Money or valuables belonging to prisoners may be deposited with the pay officer. No one shall take charge of such articles unofficially, nor shall they ever be left in the prisoner's possession while he is in confinement, or under sentry's charge.

STRAGGLERS.

Whenever a straggler from another ship, or this ship, reports on board, or is brought on board, the officer of the deck will send for the senior master-at-arms, and formally turn the straggler over as a prisoner at large, unless, after reporting to the commanding and executive officers, orders to the contrary are given.

The same formal routine of sending for the senior master-at-arms will be observed whenever any man is made a prisoner at large, or released.

Q. Give the manner of confinement, purpose of it and authority for it in various cases that may arise on board ship.

A. *Manner of Confinement.*

Confined under sentry's charge, or in cell.

Confined in single or double irons.*

Confined in cell, in single or double irons.*

Placed in solitary confinement.

Placed in solitary confinement on bread and water; or in single or double irons, or both in irons and on bread and water.*

Made prisoner at large.

Purpose of Confinement.

As punishment inflicted by the captain.

In execution of a summary, or general court-martial sentence.

To await action of commanding officer, or other authority stated.

To await trial by summary, or general court-martial.

To await trial by deck court.

For safe keeping.

Q. Under what circumstances is it legal to use irons in the confinement of Navy prisoners?

A. Only for the purpose of safe keeping, or as part of a sentence imposed by a general court-martial. Use of irons under any other circumstances is contrary to law.

Q. What are the general instructions in regard to prisoners at large?

A. They will perform their regular duty on board, but will not be allowed to leave the ship, either on liberty or duty, and will be mustered nightly at a designated hour at the mast. Their names will be posted on officer of the deck's bulletin board by the senior master-at-arms, and always before coming to anchor the senior master-at-arms will ask the executive for instructions as to confining prisoners at large.

Q. What record of punishments involving confinement must the senior master-at-arms keep?

A. He shall keep a record of all punishments involving confinement and shall report to the officer of the deck, giving him a written memorandum for entry in log book, all cases of confinement and release of prisoners.

At a designated hour every morning he shall place in the executive officer's office the record of prisoners with a report

*Only for safe keeping, or when part of sentence imposed by general court-martial.

for the commanding officer of all persons confined, stating their offenses, manner and date of confinement and authority for it.

Q. What are the duties of the senior master-at-arms in regard to lights and galley fires?

A. He shall examine the holds and storerooms to see if they have been closed by 7.30 P. M., lights extinguished and the keys turned in and report result to executive at 8 P. M. At 8, 9 and 10 P. M. he shall make rounds to see that fires and lights are extinguished as prescribed, reporting result of his inspection to the officer of the deck. When the magazines are about to be opened he shall first see that all unauthorized lights and fires are extinguished and report the fact to the officer of the deck.

Q. What are his duties in regard to bumboats?

A. He shall examine the bumboats and report the presence of any unwholesome or objectionable articles therein. He shall note the prices charged and report to the executive officer any exorbitant demands or cases of unfair dealing. The Fleet Regulations of the Atlantic Fleet prohibit bumboating.

Q. In regard to smuggling of liquor?

A. He shall be vigilant in his efforts to prevent intoxicating liquor and other prohibited articles from being smuggled on board.

Q. What other general instructions for the senior master-at-arms and his assistants?

A. 1. Always be on the alert to prevent any of the crew from leaving the ship without authority.

2. Take great care that no Government property is injured or taken out of the ship without authority.

3. Use every possible effort to prevent thieving and to detect any person who may be guilty thereof.

4. Check all profanity and bad language. Suppress all quarreling, gambling and unseemly noises, and use every effort to prevent any form of improper conduct.

5. When an order is given to clear the lower decks, see that it is obeyed at once, and that no unauthorized persons remain below.

6. At general muster, the senior master-at-arms answers for members of the crew who are in confinement.

7. Make himself familiar with, and enforce the rules for the disposition of wooden boxes, barrels, tin cans and garbage.

8. Make himself familiar with and enforce the instructions in regards to lights and fires, both as prescribed by the Navy Regulations and the rules of the ship on which he is serving.

9. On board ships to which no mail clerk is assigned, the senior master-at-arms distributes mail for the crew.

10. The senior master-at-arms shall have charge of the smoking lamp and see that it is kept lighted during smoking hours only. He shall take care that there is no smoking in unauthorized places, and that the galley fires and other lights are not used by smokers.

Q. What are the general instructions in regard to SMOKING?

A. The crew may smoke from "all hands" to "turn to," during meal hours, and from the time hammocks are down until tattoo. The crew may also be permitted to smoke at other times, such as during holidays, on Saturday and Sunday afternoons, during coaling ship and cleaning up after coaling, and for a limited period during night watches, but these are privileges which may be withheld, and should be, if they lead to soiling the ship or other abuses.

2. Smoking in any part of the ship is prohibited during divine service.

3. Smoking in the ship's boats, not on detached service, is forbidden.

4. After hammocks are down the crew shall smoke only on the upper decks.

5. Prisoners shall not be allowed to smoke.

Q. What are the general duties of the senior master-at-arms in regard to messes?

A. He is responsible that order is preserved during meals. He will inspect all messing places before and after every meal for neatness and cleanliness. So far as he is able, he will prevent the crew from being disturbed at meals by the conducting of visitors through the messing spaces. He is in charge of policing and cleaning the lower decks, the scullery and galley. He has general charge and supervision of all messmen of the general mess and of the proper service of food at the mess tables.

The following is taken from the order book of a battleship of the Atlantic Fleet as a typical example of the

ASSIGNMENT OF MASTERS-AT-ARMS' DUTIES.

1. The chief master-at-arms. General supervision of the policing of the ship; makes reports of delinquencies reported to him by other masters-at-arms; in charge of all prisoners. When absent his duties are performed by next senior master-at-arms on board, in addition to the latter's own duties.

2. Master-at-arms of gun deck. In charge of policing and cleaning entire gun deck and officers' galley and scullery. General charge and supervision of all messmen of the general mess,

and of the proper service of food at the mess tables. Performs also the duties of (1) and (3) when the latter are absent. When he is absent his duties are performed by master-at-arms of after gun deck in addition to his own.

3. Master-at-arms of after gun deck. In direct charge of policing and cleaning designated compartments on gun deck, scullery, laundry, wash and bath rooms, and the crew's head. In charge of lucky bag. Keeps extra duty list. Attends at mast at reports and at executive's reports. Performs also the duties of (2) in the latter's absence. When he is absent his duties are performed by the master-at-arms of after crew space.

4. Master-at-arms of after crew space. In direct charge of policing, cleaning and messing in designated compartments. In charge of athletic gear lockers. Performs duties of (3) in the latter's absence. In his absence his duties are performed by the master-at-arms of the steerage.

5. Master-at-arms of steerage. In direct charge of policing and cleaning designated compartment, junior officer and warrant officer country and all passages connecting. Performs duties of (4) in the latter's absence. In his absence his duties are performed by master-at-arms of after crew space.

6. Master-at-arms of berth deck. Two, one each side, in charge of policing, cleaning and messing in engineer division compartments on berth deck, outside of uptake casings on their respective sides. One on starboard side has charge of rain clothes locker. When one is absent the other performs the duties of both.

7. Master-at-arms of brig. In direct charge of policing and cleaning prisoners, prison space and cells, and in charge of messes in designated compartment. Performs also the duties of (8) in the latter's absence. When he is absent his duties are performer by master-at-arms of officers' country in addition to his own.

8. Master-at-arms of officers' country. Cleaning and policing ward room and cabin country. Attends when scrubbed clothes, bags and hammocks are piped down. Performs duties of (7) in the latter's absence. When he is absent, his duties are performed by master-at-arms of brig, in addition to his own.

9. Master-at-arms of forward passage. Policing and cleaning of designated compartments. Attends at cold storage opening. Attends when scrubbed clothes are piped down. Performs duties of (10) in the latter's absence. When he is absent his duties are performed by the master-at-arms of the ammunition passages.

10. Master-at-arms of ammunition passages. Policing and cleaning of passages and living spaces below berth deck. Performs also duties of (9) in the latter's absence. When he is absent his duties are performed by the master-at-arms of the forward passage.

Whenever a liberty party leaves or returns to the ship the senior master-at-arms and designated assistants must be on deck.

Q. What are the general duties of a master-at-arms on shore?

A. *Like every other petty officer,* a master-at-arms must regard himself as always on duty in so far as preventing enlisted men from acting discreditably on shore is concerned.

Q. What duties in regard to hammocks?

A. Each master-at-arms reports reveille hammocks up for his deck. Chief master-at-arms reports six-bell hammocks. Masters-at-arms in their own parts of the ship round up owners of all stray hammocks, irrespective of divisions, when bedding is aired.

Q. In regard to crew's washrooms?

A. Allow no washing or bathing below decks outside of washrooms, no scrubbing clothes below, nor any clothes to be hung up there. See that all orders in regard to crew's washrooms and head are strictly complied with.

Q. In getting underway and coming to anchor?

A. Remain on their own decks. Keep men clear of open ports, doorways and air ports. See that the decks are cleared of all hands who are supposed to be at quarters.

Q. In order to take proper care of a compartment on board ship, what knowledge should a master-at-arms have?

A. He should be familiar with every detail in regard to the proper application of paint and shellac. He should understand and *enforce* the instructions against painting screw threads, gaskets, name plates and weather [illegible]. He should give his attention to the many minor details of cleaning and painting that result in the neat, trim and smart appearance of a compartment.

PART THREE

COXSWAINS AND BOATSWAINS' MATES

PART THREE.

COXSWAINS AND BOATSWAINS' MATES.

In addition to the special subjects for all petty officers, coxswains and boatswains' mates will receive instruction in and must show a thorough knowledge of the subjects prescribed in this chapter.

"b-1."

BOATS.

1. Practical ability to handle small boats under all conditions and circumstances.

This must be proved to the satisfaction of each member of the examining board in the case of each candidate who is recommended for advancement in rating. The candidate will first handle a boat under oars, then under sail; he must show a thorough familiarity with handling boats equipped with the various rigs in the Navy.

2. An order of the Navy Department to be found in the first part of "The Deck and Boat Book, U. S. Navy, 1916" directs that coxswains shall be thoroughly instructed in the contents of that book. Every opportunity should be given to seamen who are recommended for advancement to the rating of coxswain to study this book in detail, previous to any examination. The subject of Boats is treated at some length in Part II, "O," and Part III, "S-1," of "The Bluejackets Manual"; but the candidate for advancement to the rating of coxswain is supposed to have a good knowledge of the various subjects herein treated. If he proves that he has such a knowledge he should be given a copy of "The Deck and Boat Book" for further study. In particular, he should be required to learn the following subjects in detail: Power boats, special duties of coxswains; tactical exercises in small boats; duties of a coxswain as given in "Boat Book," Article 116; handling boats in a surf; boat salutes and etiquette, Rules of the Road; steering effect of propeller, buoys.

List of questions on the Rules of the Road.

The Rules of the Road so far as applicable to small boats are given in Part III, "S-1"; there are to be found the answers

to the following questions. If the candidate answers them all correctly, he has a good knowledge of the Rules of the Road. In the interests of safety all coxswains must be thoroughly familiar with the rules.

(1) What lights are required to be carried by power boats between 26 and 65 feet in length?

(2) Describe these lights in detail.

(3) What lights are required to be carried by rowing boats?

(4) What fog signals are required for a power boat going ahead?

(5) When shall these signals be given?

(6) What about speed in fog?

(7) What are sailing rules, one boat free and one close hauled?

(8) Both boats close hauled, opposite tacks?

(9) Both running free, wind opposite sides?

(10) Both running free, wind on same side?

(11) Boat with wind aft and any other boat?

(12) Power boats, or boats under oars, meeting so as to endanger collision?

(13) Power boats or boats under oars crossing?

(14) Power boat meeting or crossing boat under sail?

(15) Boat under oars meeting or crossing one under sail?

(16) When, under rules, one boat must give way, what does the other do?

(17) One boat overtaking another, whether under oars, sail or power boat, which has right of way?

(18) What signals are used by power boats on approaching each other?

(19) Which side of the fairway must be kept ordinarily?

(20) What signal is given on nearing a short turn or bend?

(21) When leaving the side and proceeding across the bow of a ship, what signal should be given?

(22) When two power boats are meeting end on, how does each steersman alter his course?

(23) How indicate this altering of course?

(24) If, under the circumstances, the other boat blows one blast of the whistle before you do, what would you do?

(25) You are meeting another boat end on. She blows one blast, but you find that it is not possible for her to pass on your port side, what would you do?

(26) What are "cross signals?"

(27) Are they ever permissible?

(28) What do in case another boat gives you a cross signal?

(29) You are coxswain of a steam launch. A launch is approaching on your port bow, so as to involve risk of collision, who has the right of way and what do you do?

(30) Suppose the other boat was on your starboard bow?

(31) Suppose the boat is overhauling you anywhere from 2 points abaft your beam to astern?

(32) Suppose it is a sailing vessel on your port bow?

(33) Suppose a sailing vessel is coming up anywhere on your starboard quarter, close hauled and on the starboard tack?

(34) What is meant by close hauled?

(35) What do you mean by running free?

(36) What is meant by a short blast of the whistle?

(37) Long blast?

(38) When are you justified in disregarding the rules of the road?

(39) Why is it absolutely necessary, when you have the right of way, for you to hold your course and speed?

(40) What anchor light would you use if anchoring in a cutter over night?

Q. You are coxswain of a power boat approaching a ship when flag or pennant is not displayed in the bow, or at night, or during the day when the curtains are so drawn that the rank of passengers cannot be distinguished, how do you indicate their rank?

A. Sound short blasts of the steam whistle as follows: President of the United States, 8 blasts; Secretary of the Navy, 7; Assistant Secretary of the Navy, 5; Admiral of the Navy, 7; Admiral, 6; Vice-Admiral, 5; other flag officer, 4; commanding officer, chief of staff or torpedo-flotilla commander, 3; other commissioned officers, 2; all others, 1.

Q. How do you render the hail from a boat in reply to the quartermaster's hail from the ship?

A. Vary it according to the senior officer or official who may be in the boat, as follows: For President of the United States answer "United States"; for Secretary or Assistant Secretary of the Navy, answer "Navy"; for Flag Officer in chief command answer "Fleet"; for Chief of Staff (when not in command of a ship), answer "Staff"; for division commander answer "——— Division" (giving the number of his division); for Flotilla Commander, answer "Flotilla"; for Commanding Officer, answer the name of the ship under his command; for other commissioned officers answer "aye, aye"; for other officers answer "no, no"; for enlisted men and marines answer "hello"; for boats not intending to go alongside, regardless of the rank of the passengers, answer "passing."

"b-2."

GENERAL DUTIES IN HANDLING A SECTION OF THE DIVISION.

The examining board may assume that the candidate for advancement in rating has performed duties of this nature to the satisfaction of his division officer, as it would be very improbable if he were to be recommended under other circumstances. They may also draw conclusions, in so far as this subject is concerned, from the occasions upon which the candidate has come under their own observation in the performance of his duties.

Q. What are your duties as petty officer of a division?

A. You are an assistant to the division officer in all drills. You are required to supervise the ship's work assigned to your division. You are to take pride in the neat and trim appearance of your part of the ship. At quarters it is your duty to see that the men fall in promptly, that they keep quiet and stand up in ranks. You are responsible for the proper muster of your section. Subject to the approval of the division officer and the senior petty officers of your division, you are to select men for such special details as those of messman, compartment cleaner and messenger, taking care to show no favoritism or partiality but to assign an equal amount of work to each man in the division. You are to make the details required of your division at sea, remembering always to be absolutely just, and you are to make sure of the fact that the men you detail for masthead lookout, speed cones, engine room telegraph or other special duties thoroughly understand what is required of them. *Every error that these men make through lack of proper instruction is a direct reflection on your abilities as a petty officer.* In instructing men in special duties, you must exercise patience, remembering that some recruits have never seen a ship before they find themselves on board. You must furnish the necessary number of men from your section promptly in answer to any call. You have opportunity to exercise executive ability in regard to the proper assignment of men to cleaning stations. You are to instruct men of the division how to scrub clothes, hammocks and bags and to stop them on the line. In the absence of the division and junior division officers, you are to take charge of the division at quarters, provided you are the senior petty officer of the division. Your constant aim should be not only to make your division an efficient one, but to make it the best division on the ship.

"b-3."

DECK SEAMANSHIP.

As a rule, an officer who has done duty as officer of the deck for any length of time on the ship to which you are attached has a pretty good idea of your abilities in regard to deck seamanship, provided you are a petty officer of a deck division, or a seaman who has proved worthy of recommendation for advancement to the rating of coxswain. The officers composing the board that examines you for advancement in rating will usually be officers of deck divisions. In marking you in this subject of Deck Seamanship they are bound to consider to a great extent their own knowledge of your abilities as a seaman during the time you have come under their observation. This also is fair to you, because you will stand or fall, not as a result of an hour's examination alone, but also as a result of the quality of work you have done for weeks, or maybe months. Of course, you must not forget that your examination will also have due weight, and that you cannot be advanced in rating if you get less than a 2.5 in any one subject or a general average of less than 3.

You may expect the examination in deck seamanship to be thoroughly practical. For example, you may be called upon to supervise the lowering and hoisting of one of the ship's boats. You should be able to answer accurately and in detail the following questions on matters that form part of your daily duty:

1. Describe in detail the duties of your division at mooring and unmooring ship. Name and describe all the gear provided, and state what gear your division provides.

2. Same, mooring to a dock and unmooring.

3. What are your duties as petty officer of division in getting underway and coming to anchor, stating all details you make?

4. What are your duties at coaling ship? How do you rig the boom used by your division? What gear does your division provide? In getting the coal on board, is it your duty to handle bags and shovels, or to direct the work? State how men should be detailed for gangs of shovelers, at trucks, bags and other duties.

5. Rig collision mat.

6. State your duties as boatswain's mate of the watch in port and at sea.

A. In port. Remain within hail of the officer of the deck. Pass all orders received from him, taking care not to change the word in the slightest degree from the exact terms in which it was given you. See that side boys and bugler remain in part

of the ship designated for them, that they are always ready for a call, that they do not loaf or read, and that they are in clean uniform of the day. See that boat lines are properly tended, and hauled up when the boat shoves off. See that all orders from the officer of the deck are properly carried out. Take charge of all work as directed by the officer of the deck. See that lower and quarter boom guys and boat riding lines are hauled well taut, and that no rope ends are hanging over the side. Make frequent inspections of the upper decks to see that everything about the decks and aloft is neat and shipshape. When sweepers are piped, see that decks are cleanly swept, waterways and spit kids cleaned and ladders wiped off.

Such are only a few of the duties of the boatswain's mate of watch who, according to his ability and attention to duty, can make himself of great value or absolutely worthless as an assistant to the officer of the deck. The duties at sea may be summed up in like manner by a little thought.

7. What are your duties at the general drills, and at clearing ship for action?

"b-4."

INFANTRY.

You will be placed in charge of a squad and told to drill it in close and extended order. This you should be able to do if you have paid attention at company drill, and if you have the natural ability of command that will fit you for a petty officer. The details of the drill are to be found in "The Landing Force and Small Arm Instructions, U. S. Navy, 1916." If you are uncertain in regard to your ability to drill a squad, ask your division officer where you can obtain a copy of this book. You will be required to prove that you have a thorough knowledge of the Springfield rifle, and are familiar with all the methods of firing and the necessary commands given.

"b-5."

ARTILLERY.

If practicable, you will be told to drill the crew, the support and the reserve of a 3-inch field piece. If this is not practicable, you will be thoroughly questioned in regard to the details of this drill. The drill is given in "The Landing Force and Small Arm Instructions," and an outline of the drill is given in this book. (Part II, "W," and Part III, "S-8.")

"b-6."

GUNNERY.

This examination also will be mainly practical. You will be required to station a crew at the gun to which you are assigned, and explain the duties of each member of the crew. You will be required to station a turret handling room's crew and explain the drill (in detail if you are in a turret division; in general, if you are in any other division). You must be able to explain your duties preparatory to, during and after target practice, both as petty officer of your division, and at your own gun station.

You must be able to answer questions of the following nature in regard to the repairing of targets.

Q. What boats are usually used to repair targets?

A. Motor sailing launches.

Q. How are they prepared for that purpose?

A. Protect outside of boat with a net and fenders.

Q. What gear is carried?

A. Spare target shrouds, halliards, masts, axes, saws, life jackets, life preservers, a 4½-inch tow line and a number of target screens.

Q. You are in charge of a repair boat and party. What precautions must you take in approaching the target raft and while repairing the target?

A. On approaching, keep clear of wreckage which may damage and sink the boat. Keep careful watch over men working on the raft to see that they are not injured by falling wreckage or washed overboard. Have two circular life buoys with lines trailing astern of target raft.

"b-7."

SIGNALS.

You must prove your ability to send and receive wigwag and semaphore signals with absolute accuracy and reasonable rapidity, and your ability to read the Ardois. Signals complete are given in "The Deck and Boat Book"; but a good understanding of them may be obtained by careful study of this book (Part II, "Z," and Part III, "S-11").

"b-8."

MARLINESPIKE SEAMANSHIP.

The following list of questions is considered to cover the requirements of this subject. This examination is, of course, entirely practical:

1. Make a neat long splice in 3 stranded rope.
2. Make an eye splice in 2½-inch or smaller, wire rope.
3. Prepare and serve wire rope.
4. Reeve off a double purchase.
5. Make a 3, 4 and a 5 stranded turkshead.
6. Make a double Mathew Walker, and a man rope knot.
7. Mouse a hook correctly.
8. Make single and double carrick bend.
9. Rig a parbuckle.
10. Make a wire grommet.
11. Strap a block.
12. Make a chain and four stranded eye splice.
13. Put on a racking seizing.
14. Rig a strap and toggle.
15. Make a wire eye splice.
16. Make a shroud knot.
17. Clove hitch [illegible] piece of rail stanchion or piece of rope.

BOATSWAIN'S CALLS.

NOTE.—Originally prepared by Chief Boatswain Stephen McCarthy U. S. N. and adapted from NAVAL INSTITUTE PROCEEDINGS, No. 147.

THE CALL.

Description.—The instrument and its nomenclature are illustrated in Figures 1 and 2.

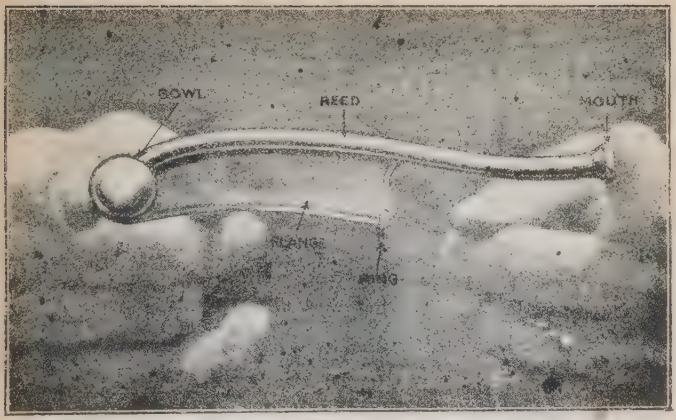


Fig. 1.

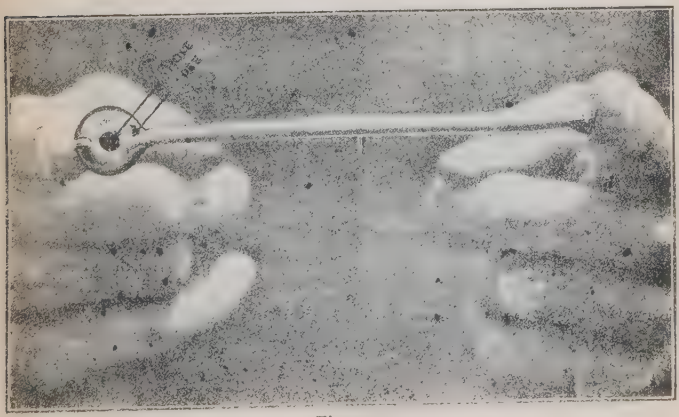


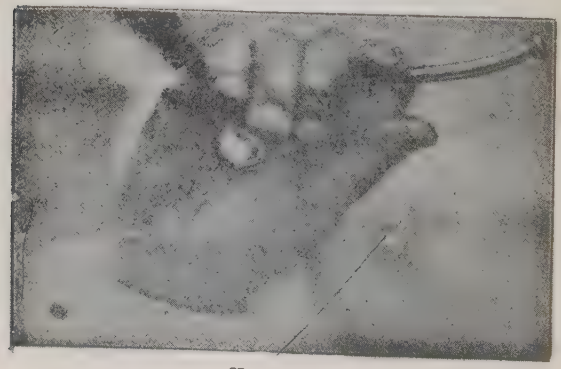
Fig. 2.

Tuning.—(1) Some calls issued are not shrill enough in sound, and each user of a call has his own method of tuning his call to that shrill note required in nearly all the pipes used.

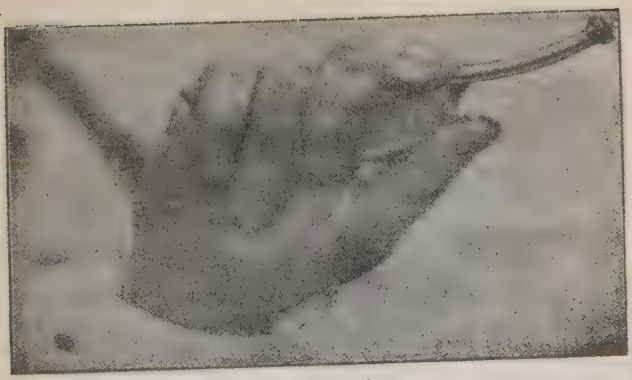
(2) Most calls are too open at the pee and have to be flattened or soldered at the sides of the pee, so as to fill the space between it and the bowl.

(3) Some calls are improved by scraping the wind edge or edge of the bowl farthest from the pee. It is sometimes necessary to enlarge this hole by scraping as well as by sharpening the edge until the reed strikes the hole fair. A test of this is often made by pushing the large end of a broom straw through the reed to find how the straw hits the wind edge of the hole. That edge of the hole should split the straw. The call once tuned should sound if held with its mouth to a gentle breeze; and, when blown with open hand, should sound from the most repressed pressure to the full strength of the lungs without any flaw in the sound known as wind leak, or hoarseness; and the sound with closed hand should be as clear and shrill as it is possible to make it.

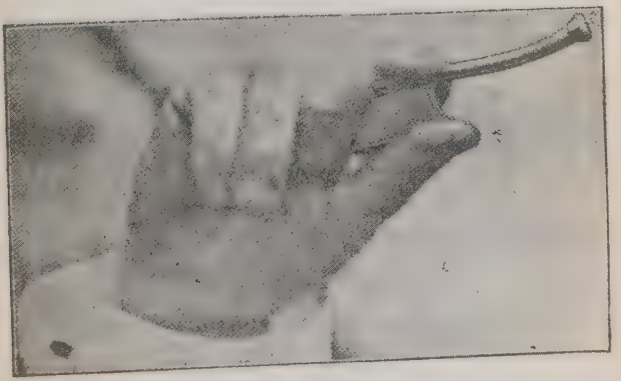
Positions of the Hand.—(1) There are four positions of the hand; *open, curved, closed* and *clinched.*



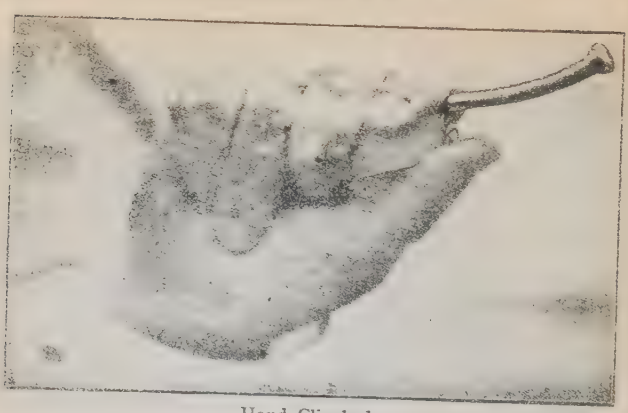
Hand Open.



Hand Curved.



Hand Closed.



Hand Clinched.

(2) These positions also indicate the lung force or pressure of blowing. As a rule the open hand calls for the least pressure required to make a soft, clear note; while the clinched calls for all the pressure that can be used in making the note shrill and clear.

PIPING AND PASSING THE WORD.

The Score, Explanation.—(1) The four positions of the hand open, curved, closed and clinched —are indicated on the four spaces of a musical staff, thus:

Clinched
Closed
Curved
Open

(2) A *straight* line indicates a *smooth* note.
(3) A *dotted* line indicates a *rattled* note.
(4) A *broken* line indicates an *undulating* note.
(5) *Full arrow heads* along a line indicate *full* breath impulses.

(e) *Half arrow heads* along a line indicate *gentle* breath *impulses.*

(f) Intervals, or rests, are marked thus |, with the numeral of the seconds above, if more than one second is necessary; otherwise, notes are slurred smoothly.

(g) The number of seconds each pipe should be given under normal conditions is marked above the bar, but circumstances often call for the signal to be shortened.

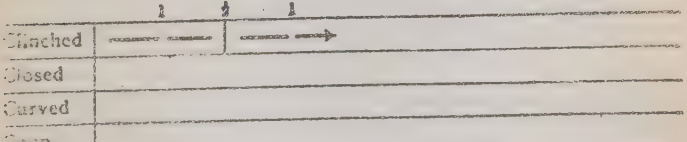
(2) (a) Smooth notes are made as any ordinary whistle is blown, and are simply raised or lowered by the lung force used.

(b) Rattled notes are made by the ballarding of the tip of the tongue against the roof of the mouth, imitating a whistle rattled by a pea.

(c) Undulating notes are made by a combination of the tongue slightly undulating while the throat checks the lung pressure or flow of breath, causing the sound to undulate smoothly, but continuously, at equal intervals.

The Use of the Voice in Passing the Word.—The tone of voice in passing the word should be modulated and pitched as the occasion calls for. The rising inflection should be given to such calls as "All hands," "Up all hammocks," etc., and the lowering inflection should be given to such calls as "Down all bags" "All the watch," etc.

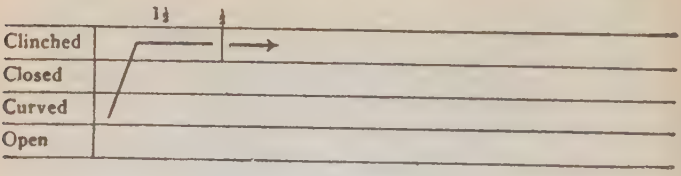
Pipes and Their Uses.—(1) *Call mates.*—Piped by the ship's boatswain to assemble his mates.



(a) Call in clinched position and sound as "peep peep," "peep peep," short and shrill with a pause of less than one second after the first two peeps.

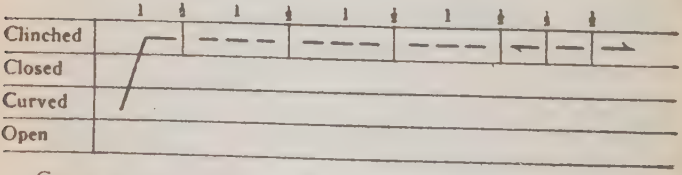
(b) This is answered by all the mates as they close on the point of assembling to receive the order to be passed from the boatswain or his chief mate, who blew the signal.

(2) *Stand by.*—Piped for "Set taut," "Stand by" and "Lay in."



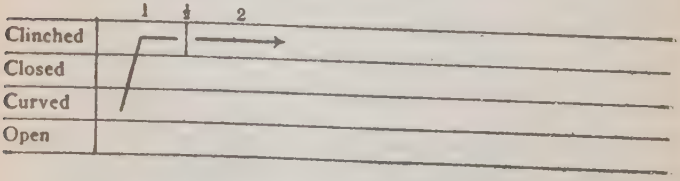
Commence with the call in the curved position and instantly change to the clinch, causing a rising peep, and follow it with a slurred peep, short and ending sharp.

(3) *Lay up.*—Piped to send men up or aloft together.



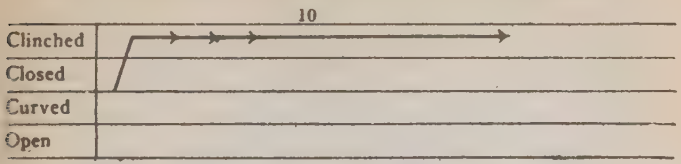
Commence as in "Stand by" and follow the long peep by a series of three sharp peeps with an interval of about one second between each series of peeps, and slow down the last three peeps to about equal intervals between them.

(4) *Lay out.*—Piped to "Lay out" in manning yards or rail; also for "Trice up" and "Out booms."



As in "Stand by" excepting that the first peep is but about half the length of the second one and is pitched higher on the start. The interval of time is about the same as the verbal order, and, in fact, should be so timed.

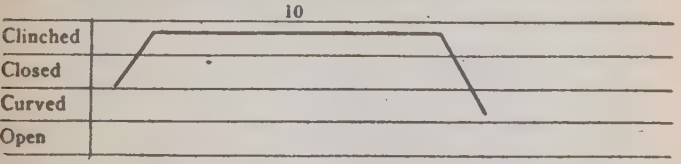
(5) *Word to be passed.*—Piped to command silence preliminary to passing an order or the word about information.



(a) Call in the closed position and clinch within a second. Impulse the shrill call with the lung force about three times and end sharp.

(b) The length of this pipe should not be less than five nor more than ten seconds. Sing out the words, "D'ye hear there," then wait for all hands to silence and pass the word as given by the officer of the deck.

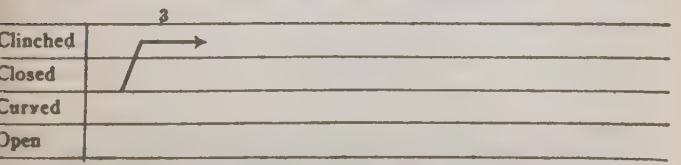
(6) *Hoist away.*—Piped in hoisting boats, in hoisting generally, and in the walk away with the cat or fish falls; and is always preceded by the pipe "Set taut."



(a) Same as No. 5, excepting that the shrill is not impulsed and the shrill is softened by changing the position from clinched to curved, and the lung pressure is lessened so as to finish low and soft, instead of sharp.

(b) The length of this pipe is about ten seconds for a signal to make a long walk away in hoisting.

(7) *Haul.*—Piped to keep men pulling together.

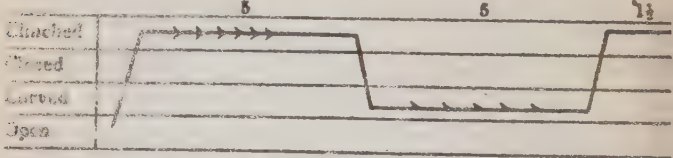


(a) Call in the closed position and change to the clinched, and so timed as to sound about an equal length of time in each

position; finish with a sharp shrill. Normal time about three seconds.

(b) This signal is used at such times as the men are facing their work at a standstill and in position for a pull together. The low note of the signal is "Stand by," and the shrill note "Pull." This is repeated as often as the signal is blown and the length of the shrill note signifies the strength and amount of time to be gained in the pull, so that as the signal is shortened it becomes the first note of the "Short belay."

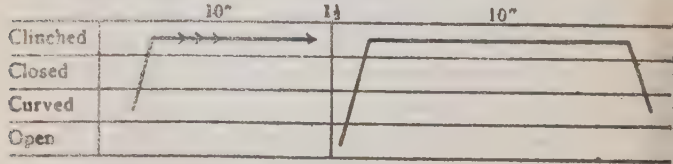
Belay.—Piped to avast hauling and make fast; and also to annul an order just piped.



(a) Call open; close sharply to the clinch and impulse with the tongue to the roof of the mouth about six times while holding the first shrill of about five seconds; then change to the curved and impulse softly with the breath and tongue to cause a smooth, undulating sound for about the same interval as the impulsed shrill; then clinch sharply and finish with three shrill slurred peeps in rapid succession.

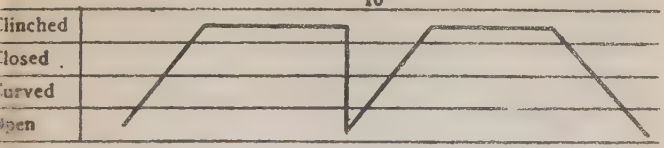
(b) This is the most difficult pipe to blow, owing to the contraction of it. The "Short belay" is more uniform in sound, as it really grows out of the "Short haul." The "Short belay" means "Hold fast."

(g) *All hands.*—Piped as a "general" for all events calling upon "all hands"; also for calling the first, mid and morning watches.



Close to the clinched and impulse softly about three times, holding the shrill for ten seconds, ending sharp, then again close to the clinched softly and hold the second shrill for ten seconds and allow it to fall softly to a finish for three seconds.

(10) *Boat call.*—Piped to call away a boat; also to call a division or divisions to quarters.



(a) Call in the open, close to the clinched, hold the shrill for five seconds, then open and close again to the clinch and hold the second shrill for another five seconds, then open and allow the signal to end softly, allowing about three seconds for the fall to silence.

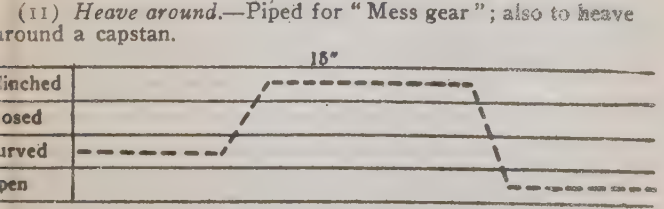
(b) All hands should listen to this pipe, as the boatswain's mate is to sing out in a long-drawn "Away" the boat that is to be manned; and he should use the word "away" a second time in the call of the barge or the gig; such as "Away, barge (or gig), Away." Etiquette requires that both the pipe and the word, when calling away the barge or the gig, should be full engthened. The pipe and the word for other boats are not to be so long.

(c) In calling a division or divisions to quarters, follow with "All the ——— division—to quarters."

(d) The boatswain's mate looks for silence as in after the "Word to be passed" pipe, and then pitches his voice in a roaring song, raising it to its full power on the first word of the call, and lowering it on the last syllable of the last word.

(e) The interval of the song is about equal to the interval of the call.

(11) *Heave around.*—Piped for "Mess gear"; also to heave around a capstan.

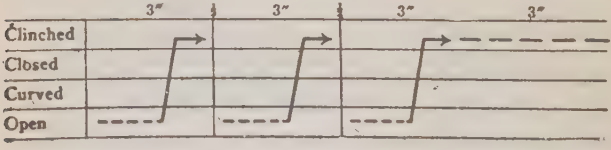


(a) Call in the curved, and blow very softly with an undulating sound by checking the breath with the throat, allowing the tongue to slowly undulate; then in the clinched position,

increasing the rapidity of the undulations from about the same interval as during the rising; then allow the sound to fall back to the soft, low tones of the start.

(b) Make a double heave around for the capstan, and a single long heave around for mess gear; but the interval of the double heave around should not exceed that of the single heave around.

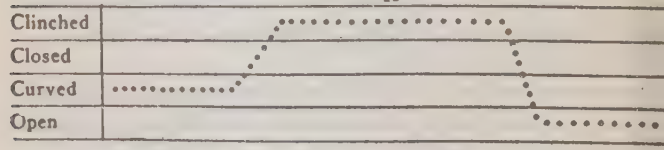
(12) *Sweepers.*—Pipes all sweepers to start their brooms and clean out spit-kits.



(a) Commence as in "Heave around" and close sharply to a short shrill. Repeat this three times and finish with four or five sharp peeps from the closed to the clinched in rapid succession. Repeat this from its commencement, but instead of finishing with the sharp peeps, make the sound more like an impulsed shrill as though slurring the peeps.

(b) If necessary, the boatswain's mates follow with the word "Clear up the decks for quarters."

(13) *Veer.*—Piped to "Ease away," "Walk back" and "Slack away." A slurred veer calls side boys to "tend the side"; one veer, two side boys; two veers, four side boys; three veers, six side boys; four veers, eight side boys.



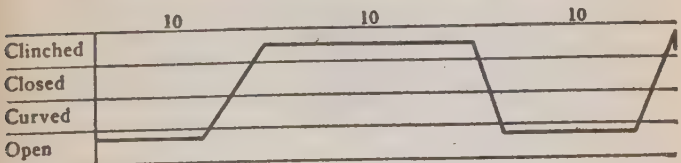
(a) Call in the curved and blow to imitate a whistle rattled by a pea. This rattling sound is produced by ballarding the tip of the tongue against the roof of the mouth; and the rapidity of the ballarding is in proportion to the pitch of the sound rising to the maximum in the shrill rattle.

(b) For walking back the falls, this pipe is sounded continuously during the walk back or the lowering from a belay

and the speed of the lowering is in proportion to the undulations of the pipe, or the rapidity of its rising and falling in sound caused by changing from curved or open to clinched, sometimes accentuated by impulsing with the throat; short peeps of it indicate to "lower handsomely" for a short distance as in the case of fouling while lowering.

(c) At the finish of the lower or at the "come up," the signal is finished with a short, sharp peep as in the finish of "Pipe down."

(14) *Piping the side.*—Accompanies appropriate side honors.



(a) Fill the lungs, commence with the lowest smooth note and rise to the shrill, then fall to the low note again and finish with a low, soft shrill.

(b) The time in rising to the shrill should be about equal to the time of holding the shrill, and the time of falling from the shrill should be about one-third less than that of rising, so that the time of rising, holding and falling to a finish are about equal.

(c) The pipe "Alongside" is started in time to finish as the boat makes the gangway.

(d) The pipe "Over the side" is started in time to finish it when the visitor is greeted by the officer of the deck. At the first note of this pipe, the boatswain's mate takes station in rear of the proper inboard side boy and all side tenders come to the "Salute," remaining at "Salute" during the sound of the pipe, and dropping to "Attention" at its last note.

(e) Upon the visitor's departure the ceremony is reversed as follows: Boatswain's mate commences the first note of "Over the side" as the visitor passes him in departing; and the first note of "Away" as the visitor's boat gathers headway and curves away from the gangway in shoving off, and this signal should be very long-drawn in the finish.

(f) In the piping of officials alongside and over, the side pipe is lengthened to full breath for officials receiving eight side boys. But short side pipes in any event are considered lubberly and contrary to the proper "etiquette of the side."

(g) For officials received with eight or six side boys, the side will be piped by the ship's boatswain. For officials received with four side boys, the side will be piped by the chief boatswain's mate. For officials received with two side boys, the side will be piped by a boatswain's mate.

(15) *Pipe down.*—(a) This pipe is a combination of the pipe "Word to be passed" and a long veer of about ten seconds; ending in a sharp, short peep, with an interval of one second between the two pipes.

(b) This signals the termination of all evolutions and ceremonies to which all hands had been called, and is blown by the boatswain's mate of the watch. After the sounding of taps, follow the "Pipe down" with "Silence fore and aft."

(16) *Pipe to (any) meal.*—(a) Pipe "All hands," long "Heave around" (mess gear) and long "Pipe down."

(b) The combined calls should cover an interval of not less than one minute.

PART THREE

GUNNER'S MATES

PART THREE.

GUNNER'S MATES.

In addition to the special subjects for all petty officers, gunners' mates will receive instruction in and must show a thorough knowledge of the subjcets prescribed in this chapter.

"g-1."

CARE AND PRESERVATION OF BATTERY.

There are many points in this regard that can be learned only by observation and experience. A complete list of questions under this heading would form a small book in itself. The following are given as typical questions:

Q. Where can you find drawings and descriptions of all the mechanism of the guns of your battery?

A. In pamphlets issued by the Bureau of Ordnance. These are kept on board ship in the custody of the Gunnery Officer.

Q. In what other books can you find details in regard to the care of the guns of your battery?

A. In "Ship and Gun Drills" and the "Gunnery Instructions."

Q. What is your first duty after you are assigned to a turret or broadside division?

A. To clean and overhaul the mount and all parts of the gear, and to check up the stowage of spare parts and tools. Never attempt to dismount or disassemble a part of any mechanism until you are thoroughly familiar with its details. Such knowledge can be obtained from a study of drawings and descriptions, or by careful attention when the piece of gear is being disassembled by someone who understands it thoroughly.

Q. What care must you take in assembling mechanisms?

A. Avoid the use of force. If the mechanism has been properly assembled, the parts should return in place easily.

Q. Why should all gear be thoroughly overhauled and cleaned before running?

A. Chippings are apt to be present in bearings. If these are not removed, they will cause cutting and permanent injury.

Q. What precautions must you take in the use of emery or other gritty substances?

A. Never allow them on any working surfaces, such as threads of the plug, screw box, plug tray, gearing, or where there is any danger that they will fall on bearings. Be particularly careful that such substances are not used on the primer seat.

Q. What about lubrication in general?

A. Insufficient lubrication is a general cause of trouble. Keep oil holes plugged with leather. Keep oil away from contacts of firing mechanism and primer seats. Be careful what kind of lubricant you use; the amount of lubrication necessary will sometimes depend on whether a light or a heavy oil is used. Use heavy oil on bearings of slow moving, heavy duty shafts. Such bearings should be flushed out occasionally with kerosene to prevent the grease from hardening and stopping the flow of the lubricant over the entire bearing surface. All gears require heavy grease, such as vaseline. Much used gears will often heat up and soften the lubricant to such an extent that it will ooze out of the gear box. In such cases, heavy grease mixed with powdered graphite will usually remedy the trouble. Pack ball and roller bearings with vaseline. Variable speed gears require a light grade of pure mineral oil.

Q. What about hoist cables?

A. Graphite them thoroughly.

Q. Turret roller paths?

A. Before training, inspect roller path and see that it is clear and well slushed, that all holding down clips are secure. Check up all clearances. Roller paths are often neglected because they are difficult of access, and the lubricant in them often becomes heavy with dust and dirt. Light oil is more efficient than heavy grease, as the dirt more easily washes away and there is less drag to the rollers. Don't let the oil get so thin that the upper roller path becomes dry.

Q. What about the frequency of running mechanisms?

A. All mechanisms should be run daily by the men who regularly operate them.

Q. What about cleaning friction disks?

A. Wash with lye water and clean with silicon to remove all grease.

Q. Breech mechanisms?

A. Dismount and examine breech mechanism carefully before firing. Examine gas check pad for cracks, smear well with tallow and set up hand taut. Have a can of tallow at hand during firing. See split rings turned so that splits are at opposite

nds of diameter. See primer vent clear in wedge of firing lock. See that firing pins are straight, unbroken and clear of seat in wedge.

Q. What is the final test, just before firing, to make sure that iring connections are in good shape?

A. Fire a primer.

Q. How remove burrs?

A. With a small half-round file. Great care is required in emoving them in order to prevent damage to the breech nechanism.

Q. What do you do in case a circuit breaker blows?

A. Put controller on "off" position and throw in circuit reaker. Never lash a circuit breaker.

Q. What are the instructions in regard to making any change r modification in the batteries or any of their attachments or n the torpedo equipment?

A. Improved arrangements shall be tried only when the arangement as supplied is not altered and can be restored if ecessary. Material changes shall be made only with explicit uthority from the Bureau of Ordnance.

Q. What are the instructions in regard to moving guns and ear?

A. Every turret shall be revolved and every gun moved hrough the extreme arcs of train and elevation, and all motors nd mechanisms in connection with the guns and ammunition oists shall be operated *daily*, except on Sundays and holidays, nd except when coaling ship or in case heavy weather renders t impracticable.

Q. Who carry out these instructions?

A. The men regularly stationed to point and train the guns nd to operate the hoists and mechanisms shall be required to o so at this time. Care shall be taken to see that all parts re properly lubricated.

Q. How often is it necessary to clean breech mechanisms?

A. The Naval Instructions direct that every breech mechansm be cleaned daily.

Q. What precautions are taken in cleaning them?

A. Don't use any gritty substance for this purpose, and never llow such a substance to get on the mechanism. The breech lug must be frequently removed from the tray so that the ottom threads may be reached for cleaning.

Q. What about the use of brick dust or other gritty subtance?

A. It shall never be used on any part of a gun.

Q. What about scraping with knives or scrapers?

A. No parts of any gun mechanism shall ever be scraped wit knives or metal scrapers or defaced or roughened in any wa

Q. What precaution is taken to prevent rust?

A. All bare metal parts of every gun and mount shall be ke lightly oiled.

Q. What about washing guns after firing?

A. Every gun must be carefully washed out with fresh wat after every firing; the muzzle must be depressed for this pu pose and the bristle bore and chamber sponges must be use If a hose is available, it will be found very efficient and its u will save the sponges.

Q. What is done after washing the gun?

A. Dry the bore and the chamber carefully with sheepsk sponge and thoroughly oil. Pass sheepskin sponge well coat with oil through the bore several times.

Q. What about the care of slope and rifling?

A. Pay particular attention to keeping the slope and origin rifling well oiled and free from rust.

Q. After firing a gun of 6-inch caliber or smaller, what done in regard to the breech mechanism?

A. Dismount it completely. Wash every part with war water, dry and rub with a well oiled rag. Reassemble t mechanism.

Q. What precautions are taken against grit and water?

A. Cover all guns and mounts whenever there is a chan of getting coal dust, grit, or salt water on them. Under su circumstances, inspect and re-oil them once a week. In r oiling, first wipe off all the old oil, as it may have becon clogged with dust and grit.

Q. When do you oil the compression slope?

A. Every fair day take out the tompion and clean a id re- the compression slope.

Q. What about the care of gas checks?

A. Protect them from the weather and from everything th could indent or bruise the pads. Keep rings scrupulously cle and well oiled. Keep pads habitually coated with vaselir As soon as practicable after firing the gun, remove the mus room and gas check, clean and oil them. When practicab remove pad, and rings; clean, dry and oil them and keep the in such place as may be appointed for them. This should done especially during bad weather.

Q. What care should be taken in regard to the gas che slope?

A. In loading, take special care not to injure the gas check slope. If the slope is injured, the escape of gas to the rear cannot be prevented and serious damage may result.

Q. What precaution in regard to the choke of the gun?

A. Take care to see that the choke of the gun is not so great as to overcome the clearance between the bore and the bourrelet diameter of the shell. This clearance should never be less than the one-hundredth part of an inch.

Q. What about erosion?

A. Frequently measure the distance from the face of the tube to the base of the seated projectile. This distance should be the same in all guns of the same caliber in a battery. If, on account of erosion, shells seat at different distances in various guns of the same caliber, allowance for this fact should be made in order to eliminate dispersion of fire.

Q. What care must be exercised in regard to the primer seat?

A. Keep it thoroughly clean and smooth. If the primer seat does not permit close fitting of the primer, primer blowbacks may occur. In this way the firing mechanism may be disabled. Avoid too frequent use of the taper reamer as it wears the primer seat.

Q. In regard to the firing mechanism?

A. Every effort must be made to keep the firing mechanism in thoroughly efficient condition. A failure on the part of the firing mechanism may cause the gun to be fired prematurely.

Q. In regard to turret clips and roller paths?

A. Make frequent examination of all turret holding-down clips, their connections and turret roller paths. Report at once if you discover that repairs to these fittings, or replacements are found necessary.

Q. After shooting a rifle, what kinds of fouling are liable to occur?

A. 1. A black fouling easily removed by a cleaning rag.

2. A sticky fouling that you can't see. Oil will not remove it. It is acid in its nature; consequently, it must be removed by alkaline materials such as ammonia on a rag, or a solution of crude soda, or soapy water may be pumped back and forth through the bore. When these solutions are used, they must be removed from the bore immediately, otherwise they will cause rust. They can be removed by pumping clear water through the bore. The bore is then dried and oiled. The safest solution to use is a mixture of equal parts by measure of amyl-acetate, sperm oil, acetone and turpentine. This removes the fouling, acts as a rust preventive and as an oil.

3. Metal f uling. The ammunition now issued gives very little trouble from metal fouling. In fact, very few rifles are troubled with it at all. It may be removed by an ammonia solution composed as follows: Ammonia persulphate 1 ounce, ammonia carbonate 200 grains, water 4 ounces. aqua ammounia 6 ounces. Great care must be taken in using this solution. Full directions for its compounding and use are to be found in the "U. S. Corps Score Book," by Captain William C. Harllee, U. S. Marine Corps. This book also contains much other valuable information in regard to the care and use of the rifle.

After firing, a rifle must be cleaned daily for several days because the bore sweats. The daily cleanings should be continued until rags run through the bore come out clean. Otherwise a bore is sure to rust, no matter how much oil is put in it. Thereafter it requires only to be occasionally cleaned and oiled. If the rifle is to be laid away, it should be oiled with heavy oil such as vaseline. The cloth of ammunition bandoleers makes excellent cleaning rags.

"g-2."

AMMUNITION, STOWAGE OF AMMUNITION, INSPECTIONS AND TESTS.

Q. Give caliber and type projectiles supplied to your ship.

Q. How are these projectiles marked?

Q. In the case of fixed ammunition, how many rounds in a box for the various calibers?

Q. How are these boxes marked?

Q. How are the shells stowed in the shell rooms?

Q. How is fixed ammunition stowed?

Q. Smokeless powder?

Q. Wet and dry gun cotton?

Q. How many groups of magazines on ship to which you are attached? Give their location, and state what kinds of powder and projectiles are stowed in each.

Q. Where is the rifle, pistol and ammunition for field guns stowed?

Q. How are magazines lighted, flooded, ventilated?

Q. Where do you find the instructions for examination and tests of powder and explosives on board ship?

A. In the "Naval Instructions, 1913," Articles 2831 to 2841 inclusive.

Q. What examinations and tests of smokeless powder are made on board ship?

A. 1. Daily. Visual examination of samples and tests of charges for local heating. Examination of violet paper.

2. Fortnightly. Visual examination of one or more charges of each index.

3. Monthly. 65.5 degrees Centigrade "surveillance" test on all indexes that give a test of less than 30 days.

4. Bimonthly. 65.5 degrees C. surveillance test on indexes giving 30 to 39 days' test.

5. Quarterly. 65.5 degrees C. surveillance test on indexes giving 40 to 59 days' test.

6. Semiannually. 65.5 degrees C. surveillance test on indexes giving 60-day test, or more.

Q. How make the daily examination?

A. With ammunition received from naval magazines there is always supplied a sample of each index of powder which is contained in a glass bottle with a tight glass stopper. The different samples are stowed in racks provided for them in the same magazines with the indexes which they represent. They shall never be opened except for the purpose of conducting the violet paper test which will be referred to later. These samples shall be examined daily, without removing the stopper, in order to note whether the powder retains its normal appearance. The presence, at any time, of reddish or orange-colored fumes in the bottle will indicate decomposition of the powder.

Since advanced decomposition of powder is often accompanied by heat, several charges of each index shall be examined daily for evidence of heating by laying the bare hand on the surface.

Q. How make the fortnightly examination?

A. Make a visual examination of the powder in one or more charges of each index for signs of decomposition, or change of appearance. Select different charges from time to time for this examination, and, after making it, take particular care to see that the tanks or cartridge cases are restored to their former air-tight condition. The contents should be exposed for as short a time as possible. The inside of a tank, case or bag that has been giving off nitrous fumes (which accompany decomposition) will probably show a reddish or orange appearance. Upon first opening such a package, a characteristic acrid and pungent odor of nitrous fumes can be readily detected, by smelling. Upon this point depends the main value of this examination, and the conditions upon first opening a charge should be carefully noted by applying the nostrils to the charge immediately after opening. *The odor of ether is natural,* and of no consequence.

A small scoopful of the powder should be taken into a good light and examined. Powder is of various colors, ranging

from light yellow to a dead black. Certain indexes have been dyed a bright red, which, in the course of time, will bleach, but this bleaching is not to be taken as a sign of decomposition. Other varieties will change color, darkening from the original color to brown or black. This indicates a certain change, but does not indicate loss of stability or change in ballistic qualities. In general, no notice need be taken of the color or change of color, except that a very marked whitening of the grains, in connection with other indications, is to be considered as indicating loss of stability. The grains of decomposing powder will, in a measure, become soft, yielding to the pressure of the thumb nail or crumbling easily.

Q. What is done whenever any index shows loss of stability in the daily or fortnightly examination?

A. It is subjected to the "surveillance" test.

Q. What is the surveillance test?

A. A sample of 15 to 50 grams in weight is taken from the broken charge. This sample must be in whole grains and the lesser weights will be taken for the small caliber powders. Place the sample in an eight ounce bottle, made tight by carefully grinding the stopper, and expose it in the 65.5 degrees Centigrade constant temperature oven. The bottle must not be opened during the test. The end of the test is marked by the first appearance of red fumes in the bottle. The record to be made is the number of days it takes to develop these fumes. Examine the bottles for red fumes once every 24 hours in a good light. The fumes will be a yellowish red in color. They will not be dense and can best be seen by looking through the bottle at a white background. If you have any doubt as to the presence of fumes, carefully note the appearance of the bottle and make another examination on the following day. Twenty-four hours' additional exposure should very considerably increase the depth of color.

Q. What should be done with the sample at the conclusion of the test?

A. Remove the sample from the oven and throw it overboard, since it may explode if the test is carried too far.

Q. Even if powder shows no signs of decomposition at the daily or fortnightly examination, is it ever subjected to the surveillance test?

A. The surveillance test is applied to one sample from each index every six months. These tests are started July 1st and January 1st each year, and the results are reported to the Bureau of Ordnance at their completion. At the end of 60 days the test shall be discontinued unless for particular reasons it

is advisable to run it longer. Any index that does not show red fumes in this period is to be reported as "60 days plus." In any case where an index assigned to 5-inch 40 caliber, or smaller guns, gives red fumes in less than 20 days, or an index assigned to larger guns gives red fumes in less than 40 days, the results are to be reported to the Bureau of Ordnance immediately.

Q. Where is the surveillance test conducted?

A. In an electrically-heated constant temperature oven supplied for this purpose. Full directions accompany each oven.

Q. When may powder be destroyed?

A. Only when it shows unmistakable signs of advanced decomposition. In the event of such deterioration every charge of the index on board shall be examined, and only such charges will be destroyed as contain the decomposing powder.

Q. How can you tell decomposition in this advanced stage?

A. 1. The grains are easily crumbled.

2. There is an unmistakable odor of nitrous fumes.

3. Very low litmus paper and surveillance test.

Powder found to be in a soft or mushy condition shall be thrown overboard immediately.

Q. Whenever powder is landed or destroyed because of its unstable or decomposed condition, what is done?

A. Samples of each index are preserved and forwarded to the naval proving ground for examination. The Bureau of Ordnance is notified at once of the shipment and the reasons therefor.

Q. What is the violet-paper test?

A. Place 12 ounce portion of sample in a 16 ounce glass-stoppered bottle. Put one strip of dry violet paper on the sample, marking paper with date of starting the test. Close bottle tightly and stow it in the warmest part of the magazine from which sample was taken. The time of the test is the number of days required for the paper to become white. The bottle shall not be opened during this time. Only one piece of paper shall be allowed in the bottle at any one time. Loss of color shall be checked by examination in sunlight and comparison with prepared standards.

Q. Why is violet paper superior to litmus paper?

A. Because it is not affected by any acid except the fumes of oxides of nitrogen; it is not affected by diffused light or ordinary handling.

Q. What inspections are made of dry gun cotton?

A. Weekly.—All dry gun cotton primers. Don't open glass jars at this inspection. Merely observe condition of blocks

and the strips of litmus paper between them. If any serious decomposition has taken place, the gun cotton will be found covered with pasty, yellow spots; the jar will be filled with brownish-red highly acid fumes, and the litmus paper will show a decided red color.

Monthly.—Even if no change is observed in the litmus paper at the weekly inspection, the following test is to be made once a month. Lift the block out of the jar by the loose ends of the tape, and place it on a perfectly clean, dry piece of blotting paper. Then untie the tape and separate the blocks; take care not to touch them with the fingers. (A perfectly clean, dry crash towel may be used in handling the blocks.) Remove strips of litmus paper, insert freshly moistened strips in their places, and tie the tape as before. After an interval of one hour, examine the ends of the strips of litmus paper.

Q. What inspection is made of wet gun cotton?

A. Quarterly.—The wet gun cotton is packed in the torpedo war heads or in the mine charge cases or countermines, and the weight of the wet gun cotton and its containing case is stamped on the case. The cotton should contain 25 per cent of water. These cases are again packed in stowage boxes and the gross weight of wet gun cotton, war head (or mine charge case), and stowage box is stamped on the outside of the box. Every three months these cases are weighed, and any loss in the gross weight is made up by the addition of pure, distilled water through the filling hole, which is then to be closed carefully.

Q. Where find detailed instructions in regard to the examination and tests of explosives?

A. The Bureau of Ordnance issues such instructions. *Current instructions are subject to change,* as improved methods are suggested and adopted from time to time. The Gunnery Officer and the Gunner of the ship are always familiar with the latest instructions.

Q. What inspection must a magazine or shell room pass?

A. It must be dry, and the lining must be tight. The means for flooding and draining must be efficient and in good order. The arrangements for stowage must be complete and ample. The lenses must be clean, carefully set and without fracture. The lighting apparatus must be in order, well ventilated, ample in power and capable of burning at least 4 hours. The means for supplying ammunition to the battery must be safe, efficient and ample.

Q. How often are magazine flood cocks tested?

A. Weekly.

Q. What routine examination of magazines is made?

A. Magazines on board ship containing powder or fixed ammunition shall be carefully examined daily. The temperature shall be noted and recorded and the maximum and minimum temperatures reported to the officer of the deck. It shall be observed whether the air is good and untainted and whether normal conditions exist and the fact that such an inspection has been made shall be entered in the ship's log. This daily examination shall be made by the gunner or his assistant, or by such persons as the captain may designate. Shell rooms containing loaded shell only shall be examined weekly.

Q. Who is the custodian of the keys to all storerooms containing ammunition and explosives and of all flood cock wrenches?

A. The captain. He shall take such steps as may be necessary to ensure that the flooding and sprinkling testing caps and plugs are kept locked except when they are actually in use for testing, and that they are never left attached to the flood cocks or sprinkling systems except when the latter are being tested.

Q. What are the instructions in regard to the opening of magazines?

A. They are never to be opened except with the knowledge and consent of the captain, and when they are opened, every precaution must be taken to prevent accidents. An officer shall always be present to superintend the duty performed and to receive and return the keys.

Q. What about powder removed from the magazine for saluting purposes?

A. It shall not remain out over night. During the day it must be kept in tanks with the lid screwed down, and a sentry or other responsible person must be detailed to watch it.

Q. For what purposes is dry gun cotton used?

A. 1. Torpedoes. Gun-cotton primers.

2. Naval Defense Mines. Gun-cotton primers.

These primers are stowed in glass jars, one in each jar; the jars themselves are stowed in boxes carrying two, four or six each.

3. Countermines. Gun-cotton primers.

Not supplied to ships in time of peace.

Q. What precautions in regard to their stowage?

A. Never stow them below the water line. Don't allow them to be exposed to undue heat, nor to the direct rays of the sun. Don't place them near any of the important parts of the ship such, for example, as ammunition hoists, where the explosion

of one or more primers might result in serious damage. If possible, no two boxes should be nearer together than ten feet.

Q. Where is all wet gun cotton stowed?

A. War heads, mine charges and wet gun cotton primers are all packed in specially designed sealed stowage boxes and stowed in a special wet gun cotton magazine below decks.

Q. What is a detonator?

A. Detonators are of two kinds. Percussion detonators for exploding torpedoes and mines and electric detonators for exploding mines and countermines. The principal explosive used in their manufacture is fulminate of mercury.

Q. Where are detonators stowed?

A. In a water-tight locker in the top, protected as much as possible from the direct rays of the sun.

Q. Is it permissible to use service ammunition for drill, instruction or testing hoists and conveyors?

A. No; such ammunition is supplied for use in battle. It may be expended at target practice when authorized by the Rules for Target Practice or special instructions from the Bureau of Ordnance.

Q. What precautions are necessary when smokeless powder is removed from magazines for transportation, target practice or any other purpose?

A. Hoist the powder flag. Put out smoking lamp. Don't allow powder to be exposed to direct rays of the sun or to other abnormal temperature conditions. This applies to powder in bulk, in tanks, cartridge cases, ammunition boxes or other containers.

Q. What about the temperature of magazines?

A. Don't stow smokeless powder in any magazine wherein the temperature is habitually above 95 degrees F., or wherein the temperature ever reaches 100 degrees F. If the temperature reaches 90 degrees F., artificial means for reducing it shall be adopted. If at any time smokeless powder is exposed to a temperature higher than 100 degrees, a special report shall be made to the Bureau of Ordnance, explaining the circumstances in detail and stating the temperature and the length of time the powder was so exposed.

Q. What are the general rules in regard to magazine stowage?

A. 1. As far as practicable, stow smokeless powder for different calibers in separate magazines.

2. Don't stow black powder (except ignition charges) in the same magazine with smokeless powder.

3. Stow small-arm ammunition in a separate magazine, by itself.

4. Stow fixed ammunition, in cases containing the primers, in separate magazines, by itself.

Q. What are the instructions in regard to the care of projectiles?

A. Don't alter or disassemble projectiles comprising the service outfit without explicit instructions from the Navy Department. Keep them free from rust and remove the paint or lacquer when necessary. Remove old paint before painting so that dimensions of shells will not be increased thereby. Projectiles for separate loaded 5 and 6 inch guns are issued with rotating bands protected by rope grommets or slings. The slings and grommets shall be removed only when preparing for firing, except when stowage space necessitates their removal before stowing in the shell rooms. Since the slings are liable to damage the hoists by jamming, remove them before sending projectiles up. After slings are removed return them to the naval magazine.

Q. What are the instructions in regard to empty cartridge cases and tanks?

A. Handle and stow them with care. Turn them in at a naval magazine at the earliest opportunity. Take care not to deform them by severe handling while they are still hot from firing. As soon after firing as practicable wash them with hot water and soap, dry them carefully and repack them in the boxes in which they were supplied.

Q. What are the instructions regarding primers?

A. With the exception of such as are designated as drill primers, primers in excess of an allowance of ten per gun per year shall not be expended except in actual firing.

Q. What about identification marks on ammunition?

A. The correctness of reports and records depends on accurate marking. Don't obliterate the marks, or restow ammunition in the wrong tanks or boxes.

Q. What is the standard percentage of moisture in wet gun cotton?

A. Twenty-five per cent.

Q. What are the instructions in regard to empty rifle cartridge cases?

A. As soon as practicable after the completion of the firing, decap the cartridge cases and throw them in water. Clean inside of each case with a brush wiper or a piece of rag on the end of a wiping stick; dry them and pack them in the empty ammunition boxes. Don't pack bandoleers and clips in the boxes with the empty cartridge cases. If you pack bandoleers and clips in the same box, wrap the clips separately in paper.

Take care not to injure the zinc lining of the packing boxes. In all cases empty cartridge cases and clips shall be invoiced by weight and not by number.

"g-3."

MORRIS-TUBE, DOTTER AND SUB-CALIBER APPARATUS.

Q. Where do you find information in regard to the adjustment and operation of mechanical devices and targets for Morris-tube, dotter and sub-caliber?

A. In the "Gunnery Instructions." These devices are in almost daily use on board ship, so there is plenty of opportunity for a gun striker to become perfectly familiar with them.

"g-4."

FIRING CONNECTIONS.

Q. What methods are there of firing by electricity?

A. By battery and by motor generator.

Q. What tests should be made of the firing circuit?

A. Test circuit with voltmeter and ammeter and finally by firing primers. Remember that the yearly allowance of primers for this purpose is limited. See that every connection in the circuit is clean and secure, and thoroughly tape them all. Use ether or alcohol in cleaning connections.

Q. What else is done just before firing?

A. Overhaul the firing keys. Clean and oil the lock. Clean and examine firing pin and vulcanite bushings in electric firing locks. Use oil sparingly around the firing pin and on face of wedge. Examine all wiring and insulation.

Q. What precaution is taken to prevent the firing circuit from being carried away by the recoil of the gun?

A. See that there is a sufficient bight of wire to allow for recoil of the gun. Trice bight of wire to some point above the gun by means of an elastic or moderately strong spring.

"g-5."

BORE SIGHTING.

Every gunner's mate must thoroughly understand the details of bore sighting and adjusting telescopes. The method of bore sighting is given in detail in the "Gunnery Instructions." Briefly, the method is as follows:

PREPARATORY.—Anchor a boat parallel to ship. Erect thereon a screen, preferably white with black horizontal and vertical

lines. If impossible to use a boat, use some prominnent object ashore at the required distance. Before returning telescopes to their place, wipe the holders to remove grit. Set up gradually on each nut of the holder in succession. In doing this, don't use any wrench other than the one supplied with the sight for this purpose. When telescope is in place, move sight bar and deflection drum through a complete turn to make sure that there is no freezing of parts. Lash the breech plug back. Secure breech disc in breech and bore sight telescope, having removed all parallax. Focus telescope after it has been screwed and clamped in place. To adjust the breech telescope, there are 4 adjusting screws on the holder for the telescope. Come up on one and set up on the one directly opposite until the intersection of the telescope cross wires appears in small hole in the center of muzzle disc. Be careful not to set up the adjusting screws so hard as to strain or distort the telescope. As a check as to whether the intersection of the cross wires is centered, rotate the muzzle disc through 180 degrees. As soon as telescope is checked, take out the muzzle disc.

METHOD OF BORE SIGHTING.—Three persons, as a rule the division and junior division officers assisted by the chief turret captain, do the actual work of bore sighting. Have pointers and trainer check up the bore sighting, and report when they are satisfied. One man is stationed at breech telescope, one at elevating telescope, and the other at training telescope. Make the first adjustment on the elevating telescope, and then the training telescope adjustment. Either the horizontal or vertical wires of telescopes may be adjusted first. The man at the breech coaches in elevation and train until his horizontal wire rests upon the top edge of the target, when he sings out "Mark! Mark!" and keeps on singing out so long as the horizontal wire of the breech telescope remains in that position. The man at the elevating telescope notes how much his horizontal wire is off, and, by moving the sight bar, he brings the wire "on" to coincide with that of the breech telescope. Meanwhile the observer at the training telescope notes how much his horizontal wire is off, and, after the elevating pointer has made his adjustment, the trainer brings his wire "on" by means of the tangent screw under the telescope holder, so that, when the proper adjustment has been made, all three horizontal wires will be "on" at the same time. The three observers then change places and check. The same method is used for the adjustment of the vertical wires. The man at the breech coaches the trainer, calling out "Mark! Mark!" so long as the vertical wire of the bore sight telescope remains "on." The

elevating pointer notes how much the vertical wire of the elevating pointer's telescope is "off" when that of the breech telescope is "on," and, by moving the azimuth head, brings it on. In so doing, he necessarily moves the vertical wire of the training telescope through the same angle, so the man at the training telescope will have to wait to make his adjustment until after the elevating telescope is adjusted. The trainer makes this adjustment by using the tangent screw at the side of the training telescope and secures the holder with the clamp bolt. All observers change places and check results.

ADJUSTMENT OF SIGHT SCALES.—Without moving the sight bar or azimuth head, loosen the clamp screw securing the range strip of the sight bar, and move the range strip up or down until its zero-graduation is opposite the reference mark on the sight-bar bracket. Then set up the clamp screw and secure range strip. Loosen friction clutch on the azimuth drum, and rotate the drum until the "50" mark is under the pointer on the azimuth head, then secure it. Now replace muzzle disc in the muzzle so as to check up and make certain that the telescope in the breech disc has not been accidentally moved during the bore sighting.

AFTER BORE SIGHTING.—Remove breech telescope and breech disc and return them. Cover pointing telescopes with flannel covers. A sign such as "Hands off," or "This gun has been bore sighted" will prevent thoughtless men from tampering with the sights.

AFTER FIRING.—As soon as possible after firing, examine the sight and note any derangement, such as slipping of the range strips and dials.

Q. Where do you find full instructions in regard to the care and handling of telescope sights?

A. In pamphlet 345, published by the Bureau of Ordnance.

"g-6."

DETAILS OF THE MOUNT.

What is required under this heading is a thorough practical and working knowledge of every detail of the mount of the battery to which you are assigned. You must also have a good general idea of the principles of the mount of every other caliber of gun. Gun mounts differ greatly, and it is only by constant study of any one type that an accurate knowledge of its details can be obtained. Natural mechanical ability and attention to the cautions for assembling and disassembling parts

of mechanism, as given at the beginning of this chapter, will be of assistance in developing a man who can be relied upon to keep a battery in good shape.

"g-7."

THE DUTIES OF AN ARMORER.

To occupy this detail a gunner's mate must be an excellent mechanic; he must also be a man of absolute reliability. He must realize his responsibilities in regard to the proper care of rifles, pistols, belts, bayonets, and all other articles of infantry equipment as well as other ordnance equipment that may be entrusted to his care. After every drill at landing force or infantry, the armorer must exercise untiring vigilance in his effort to make sure that all gear has been safely returned and that it is all in proper condition. Every man in the gunner's gang, and, in fact, every deck petty officer should have a good general idea of the duties of the armorer and of his responsibilities so that they may be of assistance to him in making sure of the fact that all gear is returned in order and in good condition.

"g-8."

THE TIME FUSE.

Q. In what type of projectile do you find a time fuse?

A. In shrapnel; it is in the nose of the shell.

Q. How much in front of the target should a shrapnel ordinarily burst?

A. About 50 yards.

Q. In order to set a shrapnel time fuse properly what data should be known?

A. The time of flight for the estimated range.

Q. What type of time fuse is used in the Navy?

A. The Frankford Arsenal Combination Fuse.

Every candidate for examination for gunner's mate must know how to set this fuse for a given time of flight.

"g-9."

TORPEDOES AND MINES.

A gunner's mate attached to the torpedo division must have an accurate knowledge of torpedoes and mines, and a good practical knowledge of their working and the details of their care and handling. A gunner's mate who is not attached to the

torpedo division must have an intelligent understanding of thi subject. He must be able to convince the examining boar that there would be every probability of his readily obtainin an accurate and thorough practical knowledge of the subject if circumstances placed him in the torpedo division. He must of course, be a good natural mechanic.

The subject of torpedoes and mines is such a comprehensive one that it is impossible to go into it within the limits of thi book. All the mechanical details of their operation, together with drawings of the various parts, are given in the pamphlets published by the Bureau of Ordnance. The instructions in regard to care and handling are given in the "Ship and Gun Drills."

PART THREE

TURRET CAPTAINS

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TURRET CAPTAINS.

Q. What are the instructions in regard to the examination and appointment of turret captains?

A. The captain selects candidates who seem to have the necessary qualifications from intelligent men of mechanical bent and good promise as leading men. He has these men detailed to the turrets for training in the duties of turret captain for a period of at least three months. After this probationary training, the names of those who are considered desirable candidates are sent to the squadron or division commander, who orders their examination before a board which he appoints. This board consists of not less than three officers. The majority of the board is to be composed of turret officers detailed from a ship or ships other than that on which the candidates are serving. When practicable, at least two candidates are nominated for each vacancy in the complement. It is preferable to nominate more than two candidates for each vacancy, and insure the fact that the examination will be competitive. The candidates who pass the examination will be eligible for acting appointments as turret captains, first class.

Q. What requirements are necessary in regard to the candidate's practical ability; that is, in regard to his ability to apply his knowledge?

A. In no case is an acting appointment as turret captain, first class, or chief turret captain given unless the examination of the candidate shows that he is not only thoroughly familiar with the safety precautions to be observed in the service of the guns and the method of procedure in case of a failure to fire, but also that he has been sufficiently drilled to make instant application of his knowledge *and that he is competent to take full charge of the turret at target practice or in action in the absence of the turret officer.*

Q. In what practical manner must a candidate demonstrate his ability?

A. A candidate for appointment as turret captain is required to demonstrate his ability before the board by actually drilling turret and handling room crews, preparing a turret for target practice or action, operating all mechanism, shifting of gas check pad, going through the procedure in case of a failure to

fire, and in other ways showing his practical ability to meet the various conditions and requirements in the care and handling of a turret. In regard to qualifications that cannot be practically demonstrated, the candidate will be closely questioned by the board orally, in order that the readiness of his knowledge may be ascertained.

Q. What are the general duties of a turret captain?

A. He is second only to the officers in his authority in turret, and he must be capable of performing their duties when they are absent. He must know and be trustworthy to perform the vitally essential duties of receiving orders, directing the setting of the sights, and the fire of the guns, adjusting sights, fitting gas checks, and particularly to enforce the precautions and safety regulations pertaining to loading, firing, unloading, misfires, hangfires, or unforeseen casualties. In the absence of the turret officer, the turret captain takes charge, carries out the regular drills, the training with mechanical targets, actual target practice, or commands the turret in action, in the same manner that the turret officer would do, were he present. In his daily duties he is charged with the care, preservation and efficient condition of everything belonging to the turret. He should give the necessary orders to the captains of the guns, the ammunition crews, the gunners' mates, and see that the orders are carried out, superintending and assisting with the work, when necessary. Repairs, cleaning, overhauling, general work and drill are all under his general charge, and he is responsible to the turret officer for their thoroughness. Having these general duties, it is indispensable that he acquire a thorough knowledge of the ordnance of the turret, and he should obtain and study the detailed descriptions of every part of it.

In addition to the special subjects for all petty officers, turret captains will receive instruction in and must show a thorough knowledge of the following subjects:

"A-T." ABILITY TO STATION AND DRILL THE TURRET AND HANDLING ROOM CREWS.

"B-T." ABILITY TO PREPARE THE TURRET FOR ACTION.

"C-T." DEXTERITY IN THE OPERATION OF ALL THE MECHANISM OF THE TURRET.

"D-T." FAMILIARITY WITH SUCH DETAILS OF THE CARE OF THE TURRET MECHANISM AS COME UNDER THE COGNIZANCE OF THE GUNNER'S MATE OF THE TURRET.

"E-T." A THOROUGH KNOWLEDGE OF THE SAFETY PRECAUTIONS TO BE OBSERVED IN THE SERVICE OF THE GUNS AND OF THE METHOD OF PROCEDURE IN CASE OF A FAILURE TO FIRE.

"F-T." ABILITY TO BORE SIGHT THE GUNS AND ADJUST THE TELESCOPES.

"G-T." ABILITY TO SHIFT AND ADJUST A GAS CHECK PAD AND THE BREECH MECHANISM.

"H-T." A READY KNOWLEDGE OF HOW PROPERLY TO DIRECT CHANGES TO BE MADE IN THE COMPENSATION FOR RANGE AND LATERAL ERRORS, IN ORDER TO BRING THE SHOTS ON THE TARGET AGAIN AFTER THEY HAVE BEGUN TO FALL OFF.

"I-T." A THOROUGH KNOWLEDGE OF THE FIRING CIRCUIT, WITH ABILITY TO DETECT AND REMEDY LOCAL DEFECTS.

"J-T." ABILITY TO FILL THE RECOIL CYLINDERS, AND A THOROUGH KNOWLEDGE OF THE LOCK.

"K-T." A KNOWLEDGE OF THE CARE AND PRESERVATION OF THE SHELL ROOMS AND MAGAZINES AND OF THE VARIOUS POWDER TESTS AND INSPECTIONS.

"L-T." ABILITY TO ADJUST KNIFE EDGES.

"M-T." KNOWLEDGE OF THE METHODS OF RECEIVING RANGES AND BATTLE ORDERS AND COMMUNICATING THEM TO THE SIGHT SETTERS AND POINTERS.

"N-T." ABILITY TO RIG AND ADJUST MORRIS-TUBE, DOTTER, AND SUB-CALIBER APPARATUS AND TO SUPERINTEND THE TRAINING AT THEM.

"O-T." A PRACTICAL UNDERSTANDING OF THE GENERAL TERMS USED IN ORDNANCE AND GUNNERY AND THE RULES FOR CONDUCTING TARGET PRACTICE, WITH A KNOWLEDGE OF THE DANGER SPACES AT ELEMENTARY AND BATTLE RANGES.

HINTS FOR MEN PREPARING FOR EXAMINATION FOR THE RATING OF TURRET CAPTAIN.

Elementary details in regard to many of the subjects covered in the examination may be found in the chapter in this book headed "Gunners' Mates." But to obtain an accurate and exact knowledge sufficient to pass an examination for turret captain, the candidate must consult a number of books and pamphlets in addition, of course, to possessing a good practical working knowledge of his turret.

Upon this practical knowledge will depend, to a great extent, the candidate's ability to pass a satisfactory examination in several of the subjects mentioned above; for example, "A-T," "B-T," "C-T." In fact, practical knowledge is essential in order to give satisfactory answers to the questions under any of the headings. In some cases, however, reference to books and pamphlets is essential. For example:

"D-T." The Bureau of Ordnance publishes a pamphlet called "Ordnance Pamphlet No. 0." This pamphlet, which is kept in the office of the Gunnery Officer, contains an index alphabetically arranged of all the pamphlets published by the

Bureau of Ordnance. If, for example, your turret is equipped with the Waterbury gear for elevating guns, and you wish to learn the details of the mechanism, consult ordnance pamphlet 0, look under "W" in the index, and you will find that ordnance pamphlet 262 covers the Waterbury hydraulic gear.

"E-T." All the safety precautions are given in "Naval Instructions, 1913," Articles 2851 to 2876 inclusive.

"F-T." For detailed instructions in regard to bore sighting, see "Gunnery Instructions," Articles 311 to 326 inclusive.

"G-T." See ordnance pamphlet on the breech mechanism of the guns of your turret.

"H-T." The question of spotting is covered in "Gunnery Instructions," Articles 343 to 410 inclusive.

"I-T." The "Gunnery Instructions" contains instructions for the care of firing circuit and hints in regard to installation.

"J-T." For firing lock, see ordnance pamphlets.

"K-T." See "Naval Instructions, 1913," Articles 2831 to 2876 inclusive.

"L-T." Drawings in the possession of the Gunnery Officer show the amount of necessary clearance around the trunnions when the guns are on their knife edges, and the knife edges must be adjusted to this clearance. The trunnion should be lifted just off its seat and most of the clearance should be left on the upper side of the trunnion. Some mounts are fitted with micrometer gauges to measure this clearanace, but with others it will be necessary to use feelers. Before adjusting trunnion bearings, the gun should be approximately level.

"M-T." Study the methods of fire control in use on board your ship. Get a good working knowledge of the procedure in the tops, the central station and sub-centrals. Make sure that you understand the methods of transmitting ranges.

"N-T." Ability to rig mechanical devices is treated in "Gunnery Instructions," Articles 58 to 96 inclusive.

"O-T." Your division officer has confidential pamphlets giving full instructions in regard to the method of conducting target practice. He will be glad to give you information necessary to pass this part of the examination. For danger spaces at elementary and battle ranges, consult the range tables published in the pamphlets issued by the Bureau of Ordnance.

Q. What is the "Gunnery Instructions?"

A. It is a book issued by the department to all division officers. It contains confidential details in regard to the science of gunnery. Information which is the result of years of experience at target practice is compiled in this book.

PART THREE

QUARTERMASTERS

PART THREE.

QUARTERMASTERS.

In addition to the special subjects for all petty officers, quartermasters will receive instruction in and must show a thorough knowledge of the following subjects:

"q-1."

GENERAL KNOWLEDGE OF DUTIES OF RATING. THE LOG.

Quartermasters stand watch on the bridge or on the quarter-deck. They should carefully enter the various columns of the log hourly, and at all times keep a very bright lookout for signals, boats approaching with persons in them, movements of ships, or any unusual occurrence, all of which they shall report immediately. Too much attention cannot be paid to keeping a good lookout at all times. Boats approaching at night will be hailed by the quartermaster. At sea the habitual watch is stood at the conn. A quartermaster must be expert in all kinds of signals, and should familiarize himself with other useful information, such as flags of all nations, uniforms, and the features of persons of importance.

Q. What is the Log?

A. It is a record of the daily events on board ship. It is kept by the officer of the deck. It consists of two general parts, the columns and the remaraks. The weather, clouds, speed, readings of barometer and thermometer are recorded in the columns by the quartermaster of the watch, under the supervision of the officer of the deck. The quartermaster must also keep a note book in which the time of certain evolutions, passing vessels, sighting lights or other matters that must be entered in the log are recorded, as well as all other information the officer of the deck may wish to be noted. The officer of the deck consults this note book when he writes up the remarks of his watch; this he does at the end of his watch, before going below.

Q. In addition to the above, what specific information is entered in the log?

A. The name and rank (or rating) of all persons who may join or be detached from the ship. All enlistments, transfers, discharges, deaths and desertions. The names of all persons made prisoners by an enemy, and of all absent without leave. The names of all passengers, with the times of their coming aboard and leaving. Courses steered and distances sailed or steamed. The time when any particular evolution, exercise, or any other service was performed. The nature and the extent of all punishments inflicted, with the name of the offender and his offense. When at sea, the sighting of land, lighthouses, light-ships and of all dangers to navigation. Any accident to the ship, including all cases of grounding, with the loss or injury of boats, spars, sails, rigging and stores, with all the attendant circumstances and the extent of the injury. Full particulars of any and every injury, accident or casualty, however slight, among the officers, crew, or passengers on board. All alterations made in the daily allowance of provisions or fresh water per man, with the authority and reasons therefor. A mention of the employment of any hired vessel, with a statement of her tonnage, the name of her master or owner, the number of her crew, the purpose for which she is employed, and the authority therefor. Whenever fires in the boilers are lighted, hauled, or allowed to die out, with the time of each change. If the engines are in operation, the average revolutions per minute and the average pressure of steam for the watch. The reading of the draft marks before leaving and after entering a port. The dates of beginning and completing each inventory of equipage and supplies. Temperature of magazines as reported by the gunner. The state of the weather and the sea will be entered in the columns of the log, but it will not be duplicated in the watch officer's remarks unless circumstances render it necessary to a proper interpretation of the columns.

Q. How do you express the State of Weather in the columns?

A. By the following letters, which have the meaning placed after them: "b" clear blue sky; "c" cloudy weather; "d" drizzling or light rain; "f" foggy weather or fog; "g" gloomy or dark stormy looking weather; "h" hail; "l" lightning; "m" misty weather; "o" overcast; "p" passing showers of rain; "q" squally weather; "r" rainy weather or continuous rain; "s" snow, snowy weather, or snowing; "t" thunder; "u" ugly appearance, or threatening weather; "v" variable weather; "w" wet or heavy dew; "z" hazy weather.

Q. How are the FORMS OF THE CLOUDS expressed in the log?

A. By the following abbreviations. (The brief description given should enable a cloud form to be recognized, but fuller descriptions are in the front of every log book):

"Ci." Cirrus. Isolated feathery clouds of fine fibrous texture. Mares' tails.

"Ci-S." Cirro-Stratus. Fine whitish veil giving a whitish appearance to the sky. Often produces halos, "Cirrus haze."

"Ci-Cu." Cirro-Cumulus. Small fleecy white balls and wisps without shades, arranged in groups and often in lines. "Mackerel sky."

"A-Cu." Alto-Cumulus. Larger white or grayish balls, with shaded portions in flocks or rows, often so close that edges meet.

"A-S." Alto-Stratus. Thick veil of grey or bluish color, brilliant near moon or sun. May produce coronæ.

"S-Cu." Strato-Cumulus. A succession of rolls of dark cloud which frequently covers the whole sky. The characteristic cloud of storm areas, especially of the fore part of such areas.

"N." Nimbus. Rain clouds. A layer of thick, dark clouds without shape, from which continuous rain is falling. Cirro-Stratus or Alto-Stratus may be seen through the breaks. Low flying fragments are known as "Scud."

"Cu." Cumulus. Thick clouds whose summits are domes with protuberances, but whose bases are flat. "Woolpack clouds."

"Cu-N." Cumulo-Nimbus. Thundershower clouds. Mountainous clouds, surrounded at top by a veil of false cirrus, and below by nimbus-like masses of clouds.

"S." Stratus. Horizontal sheet of lifted fog.

Q. How is the STATE OF THE SEA entered in the log?

A. By the following abbreviations:

"B" Broken or irregular sea; "C" Chopping, short, or cross sea; "L" Long rolling sea; "R" Rough sea; "T" Tide-rips; "G" Ground swells; "H" Heavy sea; "M" Moderate sea or swells; "S" Smooth sea.

Q. How is the STRENGTH OF THE WIND indicated by the entry in the log?

A. In figures varying from 0 (a dead calm) to 12 (a hurricane).

Q. What is the VELOCITY OF THE WIND for the various strengths?

Force of Wind by Figures.	Name of Wind in Nautical Language.	Velocity of Wind in Miles per Hour.
0	Calm	0 to 3
1	Light airs	8
2	Light breezes	13
3	Gentle breezes (occasional whitecaps)	18
4	Moderate breezes (many whitecaps)	23
5	Fresh breezes	28
6	Strong breezes	34
7	Moderate gales	40
8	Fresh gales	48
9	Strong gales	56
10	Whole gale	65
11	Storm	75
12	Hurricane	90 and over.

Q. What is the Rough Log?

A. The log is written each watch in lead pencil by the officer of the deck before he is relieved. This is called the "rough log." It is copied daily in ink in a larger book, and each officer then signs his log in ink. This is the smooth log which is forwarded every six months to the Navy Department at Washington.

"q-2."

WEATHER AND STORMS. STORM SIGNALS.

Q. In a general way, how can the state of the weather be foretold by the clouds and the sky?

A. By experience, in each locality, mariners get proficient in foretelling the state of the weather and shifts of wind by the appearance of the sky and state of the clouds. Generally speaking, the following are given as accepted indications of certain weather.

Fair weather is to be expected after (1) A rosy sky at sunset. (2) A gray sky in the morning. (3) Soft delicate clouds. (4) A light bright blue sky.

Windy weather is foretold by (1) A red sky in the morning. (2) A high dawn; that is, when the sun rises from behind a cloudbank. (3) Hard-edge, oily looking clouds. (4) A dark, gloomy blue sky. (5) A bright yellow sky at sunset. (6) A light driving scud over clear sky. (7) Gaudy unusual hues with hard definite lines.

Rain is foretold by (1) Bright red sky at sunset (possibly rain). (2) Soft clouds. (3) A pale yellow sky at sunset. (4) Small inky clouds. (5) Driving scud over heavy clouds. (6) Gaudy or unusual hues with hard definite lines (will be accompanied by wind).

Change of weather is foretold by (1) High upper clouds moving in direction opposite to that of wind. (2) Small curly streaked or spotted clouds, with overcasting vapor.

Cyclone is foretold by (1) Hard steel grey or greenish sky. (2) Blood-red or bright yellow sunset. (3) Heavy swell or confused agitation of sea.

Q. What form of cloud is most closely connected with storm centers?

A. Probably the cirrus. The value of accurate observations of the cirrus cloud is most important, as it is often closely connected with the winds. If the cirrus clouds appear as radiating bands crossing the sky, note the point where these bands meet and enter its bearing in the log, as this often indicates the center of an approaching cyclone. If the cirrus cloud is in the form of a cloud bank or sheet upon the horizon, the point of greatest density of this bank should be noted for the same reason.

Q. Generally speaking, how do dampness and wind affect the barometer?

A. A barometer generally rises with dry weather or northerly winds and falls with wet weather or southerly winds.

Q. Aside from the appearance of the sky, what are the signs of an approaching hurricane?

A. Earliest indications.—The distant storm usually causes an abnormal *rise* of the barometer, with cool, dry, fresh winds and a cessation of the ordinary land and sea breezes with a transparent atmosphere. A long, low swell is often noticed at a great distance, sometimes for hundreds of miles, with occasional high hurricane rollers. The direction of the swell, when unaffected by the presence of intervening islands and neighboring coasts, indicates the bearing of the center; as do also the light feathery plumes of cirrus cloud that radiate from a point of the horizon marked by a whitish arc.

Unmistakable signs.—As the sky becomes hazy with a thin uniform cirrus veil, halos are noticed by day and night, the barometer begins to fall slowly, the air becomes heavy, hot and moist, with red and violet tints at dawn and sunset; the low but solid and rugged looking cloudbank of the hurricane appears on the horizon like distant land. Squalls break off and diverge from it, and later squalls are noticed passing across the center of the bank. Fine misty rain forms, seeming to

grow out of the atmosphere; a heavy cross sea is felt, and the barometer while rapidly falling, becomes unsteady.

Q. Why is it necessary for the center of the cyclone to be located?

A. So the ship can keep out of harm and danger. The center is always to be avoided because it is the worst and most dangerous portion.

Q. What are STORM SIGNALS?

A. The various civilized nations give warning, received at their various stations along the coast, of the approach of storms, their direction and position of centers, so as to guide and warn vessels about to sail.

Q. Where can you find full description of these storm signals?

A. In Part III of this book, in the chapter "S-11."

"q-3."

FLAGS, SIGNALS AND CEREMONIES.

Q. What knowledge of signals should a quartermaster have?

A. He should be thoroughly familiar with all methods of signaling used in the Navy, both by day and by night.

Q. Where may he obtain such knowledge?

A. All the methods of signaling are given in full in the "Deck and Boat Book." In the introduction of that book there is an order signed by the Secretary of the Navy directing that signalmen *shall* receive thorough instruction in this book. It will, of course, be accessible to quartermasters.

Q. What are the international signals of distress from vessels requiring assistance?

A. In the daytime:

1. Gun or other explosive fired at intervals of about one minute.

2. The International Code Signal of distress indicated by "N. C."

3. The "distant signal," consisting of a square flag, having either above or below it a ball or anything resembling a ball.

4. A continuous sounding with any fog signal apparatus.

At night:

1. A gun or other explosive signal fired at intervals of about a minute.

2. Flames on the vessel (as from a burning tar barrel, oil barrel and so forth).

3. Rockets or shells throwing stars of any color or description, fired one at a time, at short intervals.

4. A continuous sounding with any fog-signal apparatus.

Q. What are the SIGNALS FOR PILOTS?

A. In the daytime:

1. The Jack hoisted at the fore.

2. The International Code Pilot Signal, indicated by "P. T."

3. The International Code Flag "S," with or without a pennant.

4. The distant signal, consisting of a cone, point upward, having above it two balls or shapes resembling balls.

At night:

1. The pyrotechnic light known as the Costons Blue Light burned every 15 minutes.

2. A bright white light flashed or shown at short or frequent intervals just above the bulwarks for about a minute at a time.

NOTE.—The attention of quartermasters and signalmen is invited to the various instructions given in the International Signal Book, many of which, through lack of space, have not been given in this book.

Q. How do you half-mast colors?

A. Hoist to full mast and then haul half-way down. If already mastheaded, haul half-way down.

Q. How haul down half-masted colors?

A. Hoist all the way up, then haul down as usual at colors.

Q. In dressing ship, what flags are at the masthead?

A. National ensign. If masts are the same height, ensigns should be the same size. At peak or on staff aft display the largest ensign in ship. Hoist jack forward. If in honor of foreign national anniversary, hoist flag of nation at main truck instead of United States ensign.

Q. Suppose a salute is to be fired when clothes or scrubbed canvas are up, what should be done?

A. Pipe down temporarily, and hoist the jack until the salute is fired, then trice up lines and haul down jack.

Q. What shows that a ship of the Navy is in commission?

A. Every naval vessel in commission carries at all times an admiral's or rear admiral's flag or captain's pennant at her truck. The pennant or the admiral's flag is at the main truck; rear-admiral's flag is at the mizzen except on a two-master ship, when it is at the main.

Q. Describe the flag of an admiral?

A. Blue, with 4 white stars.

Q. Of a rear-admiral?

A. Blue, with two white stars. If two or more rear-admirals of the United States are acting together or if they meet, the senior flies the blue flag, the juniors fly a similar flag with a red ground instead of blue.

Q. A captain's pennant?

A. The coach whip pennant, forked end; it is used by all commanding officers.

Q. When two or more naval ships are in company, how distinguish senior ship?

A. By senior officer's pennant, a short blue pennant flown from the mizzen. It is flown in addition to the captain's pennant.

Q. When admiral's or rear-admiral's flag is flying, does the captain fly the pennant?

A. No.

Q. When is the national ensign flown?

A. On ships at anchor from 8 a. m. until sunset, and when getting underway or coming to anchor during daylight; also in answer to other men-of-war which show colors under such circumstances; when falling in with other ships of war, if there is no good reason to the contrary; when near land, especially forts, lighthouses or towns; when meeting other ships at sea; if a man-of-war enters a port at night, she should hoist her colors for a short time at daylight in order to show her nationality.

Q. When is the national ensign displayed from the boats?

A. 1. While underway, or at booms, when ship is dressed. 2. Between 8 a. m. and sunset when away from the ship in a foreign port. 3. In home port when boarding foreign vessels, and at such other times as the commanding officer may prescribe.

Q. How can you tell when a flag officer is about to leave his flagship officially during the day?

A. A red pennant is hoisted directly under his flag and hauled down when he shoves off.

Q. How can you tell that a flag officer or a captain is coming on board to pay an official call?

A. The flag officer would fly his flag on staff shipped in bow of boat. A captain or commanding officer would similarly fly his pennant. These may be carried when he comes unofficially but generally they are signs of his coming officially. In foreign service it frequently happens that boarding officers who visit the ship on her arrival fly the pennant; also when they come officially from the captain or the admiral. This is not done in

our service. In this case the rank can be ascertained only by the number of stripes on the arm of the officer in the boat.

Q. What devices mark an admiral's barge?

A. Gilt stars on each bow as in his flag. Flagstaffs both forward and aft carry gilt lance head.

Q. What devices mark the boats of other officers in command?

A. A gilt arrow on each bow. Pennant and flagstaff of captain has gilt ball; commander, gilt star; officer of lower rank, flat truck.

Q. When does chief of staff not in command carry pennant in bow?

A. Only when visiting officially on behalf of flag officer.

Q. In half-masting colors, is the jack or the admiral's flag or the captain's pennant half-masted?

A. The jack is. The flag of an admiral or rear admiral, or the pennant of a commanding officer is half-masted only in the event of the death of that officer.

Q. What is the meaning of the jack when flown in the bow of a boat?

A. It is a flag of a diplomatic representative of the United States, of, or above, the rank of chargé d'affaires, for example, an ambassador or a minister.

Q. When is the union jack displayed?

A. When at anchor, the union jack is flown from the jackstaff from morning colors to evening colors, except when coaling ship, or in bad weather, or when the senior officer present gives orders to the contrary.

Q. Do merchant ships ever salute men-of-war?

A. Yes; by dipping their ensigns.

Q. How is such a salute answered?

A. By dipping, dip for dip. It is most important that a bright lookout be kept for dips; etiquette requires that they all be answered promptly.

Q. On what occasions do we dress ship?

A. On the 22d of February and the 4th of July every ship in commission, not underway, shall full dress ship from 8.00 a. m. till sunset and, at noon, fire a national salute. At sea, salute with ensign at peak. When these anniversaries occur on Sunday, postpone ceremony till Monday. Dress or full dress ship in foreign ports when requested to do so.

Q. Where do you find the instructions for full dressing ship?

A. In the introduction to the General Signal Book, or in the Deck and Boat Book.

HONORS.

Rank.	Uniform.	Salute.		Guns
		Arrival.	Departure.	
President	S. F. D.	1	1	21
President of foreign Republic or a foreign sovereign	"	1	1	21
Member of royal family	"	1	1	21
Ex-President	"	1	1	21
Vice-President	"	..	1	19
Ambassador	"	..	1	19
Secretary of the Navy	"	1	1	19
Assistant Secretary of the Navy	Dress.	1	1	17
Cabinet Officer	"	..	1	19
Chief Justice	"	..	1	17
Governor general U. S. islands	"	..	1	17
Governor of State, Territory, or U. S. islands	"	..	1	17
President pro tempore of Senate	"	..	1	19
Speaker House of Representatives	"	..	1	17
Committee of Congress	"	..	1	17
Envoy extraordinary	"	..	1	15
Minister resident or "diplomatic representative"	"	..	1	13
Chargé d'affaires	"	..	1	11
Consul general	Of the day.	..	1	11
First secretaries of embassies or legations	"	..	..	7
Consul	"	..	..	..
Vice consul or consular agent (where he is the only representative of the United States)	"	..	..	5
Admiral of the Navy	Dress.	..	..	19
Admiral	"	..	1	17
General	"	..	1	17
Vice admiral	"	..	1	15
Lieutenant general	"	..	1	15
Rear admiral	"	..	1	15
Major general (Army or Marine Corps)	"	..	1	13
Commodore	"	..	1	11
Brigadier general	"	..	1	11
Chief of staff, if not a flag or general officer	Of the day.	..	..	..
Captain (If commanding officers.)	"	..	..	..
Colonel (If commanding officers.)	"	..	..	..
Commander (If commanding officers.)	"	..	..	..
Lieutenant colonel (If commanding officers.)	"	..	..	..
Lieutenant commander (If commanding officers.)	"	..	..	..
Major (If commanding officers.)	"	..	..	..
All other commissioned officers below lieutenant commander and major.	"	..	..	..

HONORS.

Ruffles.	Guard.	Air.	Side Honors.	Flag.
4	Full.	National	Yards or rail manned and 8 s. boys.	President's, at main, during visit.
4	"	"		National, at main, during visit.
4	"	"		National, at main, during salute.
4	"	"	8 s. boys.	National, at main, during salute in foreign countries.
4	"	"	"	National, at fore, during salute.
4	"	"	"	" " " "
4	"	March.	"	Secretary's, at main, during visit.
4	"	"	"	Asst. Secy's, at main, during visit.
4	"	"	"	National, at fore, during salute.
4	"	"	"	" " " "
4	"	"	"	" " " "
4	"	"	"	" " " "
4	"	"	"	" " " "
4	"	"	"	" " " "
4	"	"	"	" " " "
3	"	"	"	" " " "
2	"	"	6 s. boys.	" " " "
1	"	"	"	" " " "
..	Day.	..	"	" " " "
..	"	..	4 s. boys.	" " " "
..	"	..	"	" " " "
..	"	..	"	" " " "
4	Full.	March.	8 s. boys.	In case of foreign officers, National at fore during salute.
4	"	"	"	
3	"	"	"	
2	"	"	6 s. boys.	
1	"	"	"	
..	Day.	..	4 s. boys.	
..	..	..	4 s. boys.	
..	..	..	2 s. boys.	
..	..	..	"	

Q. What is done if the weather is bad?

A. Ships may be ordered to "dress" instead of "full dress," and flags may, if necessary, be hauled down after hoisting.

Q. What HOLIDAYS are observed on board ship?

A. January 1, February 22, May 30, July 4, first Monday in September, Thanksgiving Day, and December 25. If the holiday falls on Sunday, Monday shall be so observed.

Q. On which of these days is a salute fired?

A. On February 22 and July 4 fire a national salute of 21 guns. On May 30 (Memorial Day), half-mast the colors at noon and fire a salute of 21 minute guns.

Q. What are the various honors shown officers and officials visiting the ship?

A. See table of Honors.

"q-4."

CHRONOMETERS, BAROMETERS.

Q. What are the CHRONOMETERS, and where are they kept?

A. They are very accurate clocks kept in the navigator's room or office. They are used in determining the position of a ship at sea.

Q. What other data is required ordinarily in determining the position of a ship at sea?

A. The altitude or angular distance of the sun above the horizon. This is measured by means of an instrument called the sextant. Both the sextant and the chronometers, and, in fact, all instruments used in navigating the ship must be handled with the greatest care.

Q. What may you be called upon to do when the navigator is taking a "sight," or measuring the altitude of the sun with a sextant?

A. You may be required to note the time in hours, minutes and seconds by watch whenever the navigator calls "Mark!" You must note and record this time with the greatest accuracy. A mistake of a second in time will throw the ship's position badly out.

Q. What is a BAROMETER?

A. It is an instrument for measuring the pressure of the atmosphere. The mercurial barometer is the standard. The reading is the height of a column of mercury which the pressure of the air supports. It is recorded in hundredths of an inch, and to do this a sliding scale, or "vernier," is provided. You must learn to read this scale, as you will use it constantly. You will probably be required to prove before the examining board that you understand how to read this scale. There is also an aneroid barometer. The meaning of "aneroid" is

"containing no liquid"; and an aneroid barometer is, consequently, a mechanical instrument for measuring pressure and contains no mercury.

Q. What is a PSYCHROMETER?

A. It is a wet and dry bulb thermometer; it measures humidity in air.

"q-5."

USE OF DRIFT LEAD AND SOUNDING MACHINE.

Q. How tell when a ship drags?

A. If there is danger of dragging, a drift lead should be put over the side with a slack line. If the ship drags, she will tauten out the line. A good range ashore is important if the heading of the ship is watched; it will tell very quickly if the ship drags.

Q. When, and how, are the lead and log lines checked up?

A. Before going to sea. Brass tacks forward on the main deck should mark off distances accurately known. By stretching a line along them any change in length may be readily discovered.

Questions and answers in regard to log, lead and sounding machine are given in Part II, "T," and Part III, "S-6."

"q-6."

ABILITY TO CONN AND INSTRUCT SEAMEN AT THE WHEEL.

This is entirely practical. Before he is rated quartermaster, a candidate must prove to the satisfaction of each officer of the examining board that he is thoroughly competent in this most important feature of his duty.

Q. In steering, what precautions are necessary in regard to your uniform and that of any other man near the compass?

A. No iron or steel should be in the pockets, or grommet in cap.

MISCELLANEOUS QUESTIONS.

Q. Is a lookout required to be kept on ship's boats after they shove off?

A. Yes; the quartermaster on watch keeps this lookout. It is always important, but of special importance when the boats are under sail, so that aid can be sent promptly if it is required.

Q. You are quartermaster on watch, a boat is leaving or returning to the ship and the officer of the deck is not on the quarterdeck, what do you do?

A. Look him up and report at once.

Q. A boat is coming alongside or passing close aboard after sunset, what do you do?

A. Hail her by singing out "Boat ahoy!" Keep on hailing till she answers or has passed.

Q. What answer will you get from the boat?

A. It will depend on the rank or rate of her passengers. For answers to hails see chapter for Coxswains and Boatswains' Mates in this part of the Manual.

Q. How do you tell the rank of an officer coming alongside in a boat when the canopy is down and you cannot see his uniform?

A. In approaching the ship the boat should have sounded a certain number of short blasts of the whistle according to the rank of the officer. For list see chapter for Coxswains and Boatswains' Mates in this part of the Manual.

Q. Briefly summarize the duties of quartermaster on watch in port?

A. Stand watch in place designated. Always have a megaphone at hand with which to hail the officer of the deck in making reports. Always be vigilant on watch. Report all boats approaching the ship, all movements of naval vessels and other large vessels, all changes of weather or barometer, unusual occurrences within sight or hearing, officers coming on board. Notify the signalman of the watch to look out for your duties while you are writing up the columns of the log. See that colors and commission pennant are clear at all times. Report to the officer of the deck when all running and anchor lights are turned on and off, and when any bunting needs clearing.

Q. You are quartermaster in charge of the signal watch, what are your duties in addition to seeing that all signals are accurately and promptly sent and received?

A. You are responsible for order on the bridge and for the neat, trim and shipshape appearance of entire signal force as well as the bridge and all signal gear. See signal halliards slacked off in wet weather. Allow no sleeping, loitering, smoking, loud talking, singing out, skylarking on the bridge. Don't allow any scrubbing clothes, hanging clothes about, or toilet making on the bridge.

NOTE.—In the chapter for Chief Quartermasters, in Part IV of the Manual, detailed descriptions of the Submarine Bell, the latest type of Kelvin Sounding Machine, and the Nicholson Log, are given.

PART FOUR

THE SUBJECTS WHICH CHIEF PETTY OFFICERS SHOULD KNOW

PART FOUR.

A SHORT TALK WITH CHIEF PETTY OFFICERS.

1. Part IV of "The Bluejacket's Manual" is written as a general guide for chief petty officers. It should be regarded more in the light of an index as to what chief petty officers of different branches are supposed to know, and what qualifications they are supposed to possess, than as a book of information. Inasmuch as every chief petty officer is supposed to be an expert in his own branch, an effort to embody in one book all of the information that each chief petty officer is supposed to know would result in a very large volume, as it would necessarily have to cover every detail of the naval profession. Consequently, this book is merely an index of the subjects that you are supposed to know; and it tells you where you may find the subject fully discussed.

2. Chief petty officers of each branch should therefore make a point of studying the subjects which relate to their particular specialty and should study them from the reference books mentioned. In doing this, chief petty officers should not overlook the subjects that are laid down for them as a class, irrespective of their specialty.

3. This "Short Talk to Chief Petty Officers" will, of course, be more directly applicable to those who are just coming up for their rate than to those who have held the rate for a long time; for chief petty officers of any length of service should be familiar with the duties and responsibilities of their position. However, as the same honor, dignity and demeanor are required of all chief petty officers, it is hoped that this "talk" may be of some value even to those who are already rated chief petty officers, by giving them the point of view of their senior officers, by telling them how their seniors regard them, how they desire to treat them, and, on the other hand, what degree of proficiency and what general demeanor they expect of them

4. Take your own particular case, for example. It is quite probable that you entered the service a few years ago an inexperienced and irresponsible boy, without any knowledge of the Navy, of discipline, and probably without any knowledge

of the special branch, or specialty, in which you are now to become a chief petty officer. During the time you served through the lower ratings you were under instruction not only as to your individual duties, but also in the elements of discipline. While you were in the lower ratings, you were not supposed to be highly responsible; you were supposed to do what you were told, to acquire the knowledge requisite for the rating you held, to use that knowledge under the direction of your petty officers, and to behave yourself and comply with the rules of military discipline.

5. Then came a great change in your status; you were appointed a petty officer. When you received this promotion, it showed that your officers considered that you had a sufficient knowledge of the details of the duties of your rating, and that you were sufficiently disciplined to warrant your stepping up from a status in which you merely did what you were told to a status in which with the knowledge of what was required to be done and how it should be done, you could be trusted with the duty of taking charge of a number of men and giving them orders, under the general direction of your seniors. Your duty was to follow up the work and assure yourself that it had been done properly. Instead of merely doing what your immediate petty officer told you to do, you, as a petty officer, had a larger field and performed your duty not by your own labor, but by directing a group of men under you; and such was your status whether you were engaged in cleaning ship, painting ship, coaling ship or drilling. In each case your excellence as a petty officer was measured by the amount and excellence of the work which was accomplished by the men under you, their practical knowledge, their proficiency, their thoroughness and their reliability. As time passed and as your experience increased, you were promoted from third class to second class, and, finally, to first class; with each promotion you added to your experience and knowledge, your duties broadened and your responsibilities increased; nevertheless, at all times you were more or less under instruction and under trial.

6. You have now come to the point where, having served through all the lower ratings, you are supposed to be an expert in your own branch. You have training and experience, and had you not succeeded in making your officers believe that you had proper regard for orders and for discipline, you would not now be coming up for chief petty officer. When you are promoted to chief petty officer, your status changes even to a greater extent than it changed when you were promoted from

the ranks to petty officer. The change from petty officer, first class, to chief petty officer probably carries with it a greater change in status than any other promotion in your whole career. Your uniform changes, your quarters and your method of living change; the treatment accorded you by your senior officers changes. All chief petty officers welcome these changes as well as the corresponding increase in pay. But don't forget that these are not the only features of your life that change. Along with all these changes comes a very great change in your responsibilities as well as the absolute necessity for a different point of view. If you forget the changes of this nature, you altogether fail in your duties to the Government.

7. The aim of this little talk is to dwell upon this new point of view, this increased feeling of responsibility, this *sense of duty* which impels you to do a thing not because you have to do it, but *because it ought to be done,* because it is your duty to do it.

8. The position of chief petty officer is one of special honor. It shows not only that you have served successfully, but that your service has met with the commendation of your seniors, that you are proficient, trustworthy and reliable. The uniform of a chief petty officer shows therefore not only that you are serving honorably now, but that you have served honorably for years, and have by your own successful effort risen to the top of the petty officers of your own branch. See to it that your entire demeanor is such as to elevate the standing of the uniform which you now wear. Make your life and your actions both on board ship and on shore such as to increase rather than to decrease the difference between the bluejacket's uniform and that of the chief petty officer.

9. Your position is such that your senior officers wish to treat you as an officer. In order to be accorded this treatment you must adopt the point of view of an officer. This point of view can best be described by saying that you must cultivate a deep sense of responsibility, a high sense of duty, and live up to a high professional standard.

10. STANDARD.—The fact that you are a chief petty officer is evidence that you know *how things should be done.* Do not neglect to do your duty properly, do not fall to a lower standard simply because you think you will not be spoken to or reported for not doing this duty properly. Such an attitude is not surprising in a recruit; there are times when it may even be overlooked in the lower ratings of petty officer, but, as chief petty officer, you have passed that stage. You are

constantly under the watchful eye of your juniors. Anything they see you do, they naturally think is all right. If, for example, they see that you are careless about your uniform or about saluting, regardless of the amount of instruction they may have received, their standard is lowered. If you are punctilious, the men under you will copy the precedent you have established. If your manner is military toward your seniors, you will find the enlisted men under you more easily brought up to standard. If the chief petty officers are thorough, respectful, and have a high sense of duty, the tone of the whole ship will follow. If, on the other hand, enlisted men see that the chief petty officers are unmilitary, that they violate orders and regulations when officers are not around, they will feel even more than ordinarily justified in doing likewise. The tone of the ship, the tone of the service itself must come more directly from the chief petty officers than from any other group of people in the Navy. You have the standard; live up to it, whether you are on independent duty, or on duty under officers; whether you are unobserved, or directly under the eye of your seniors. Live up to the standard, and you will find that those under you will be more inclined to do likewise.

11. SENSE OF DUTY.—You know the standard; you know what to do; you know the rules of discipline; of military etiquette; you know the regulations and instructions pertaining to your own branch. The Government—not the officers over you—pays you for your services. It pays you for doing things as you know they should be done. The sense of duty is that feeling that impels you to do these things not because you *have* to do them, but because it is your duty to do them. And in deciding whether it is your duty, be very liberal in your interpretation.

12. SENSE OF RESPONSIBILITY.—It frequently happens that both commissioned officers and chief petty officers see things that should be done, although it is clear that it is not their duty to them; such cases, for example, that would result in confusion were the officer or the chief petty officer in question to do them. If you are confronted with such a condition, take the point of view that you have reached a position of responsibility in the service; that something which should be done may have escaped notice; if this omission is clearly of such a nature that it is not your duty to remedy it, is is, nevertheless, your duty to call the attention of the proper person to such an omission. Sometimes lives are lost because some manifest danger has not been pointed out. If you are in doubt

as to whether it is your duty to look after something that you know should be done, the only safe rule is to do it. If you know that it is someone else's duty, call attention to it. Take the attitude that you are a part of the Navy, not merely a part of your department on an individual ship; try to do a little more rather than a little less than a strict interpretation of your duty demands. Both your seniors and you, yourself, will be better pleased, and the service will benefit thereby.

13. PROFESSIONAL WORK.—As a chief petty officer, you are an expert in your own department. There are no petty officers senior to you. Those below you will look up to you for information and instruction. *Be sure that the information you give out is absolutely accurate.* If you are weak on any feature of your specialty, study it up. It is all down somewhere in black and white. Study the best methods; keep up with all improvements. Do not feel that because you passed an examination you have finished studying. Keep yourself fully informed, and be ready to impart your knowledge and skill to your subordinates.

14. THOROUGHNESS AND RELIABILITY.—An absolute essential of your rating is reliability. This does not mean merely that you are certain to return on time for duty. It means that you may be relied upon to do thoroughly and in the manner that it should be done whatever you are going to do, however important the duty, and however general your orders may be. It means that when you report the duty finished your report may be accepted without an inspection and your senior feel that the duty has been done and everything finished as well and as thoroughly as it would have been done, had he been there personally. If, for any reason, you find that you cannot carry out your orders in every detail, report any part of the order you were unable to carry out and why you were unable to carry it out.

15. DUTIES.—Every chief petty officer understands in a general way that he is the senior petty officer on the ship in his particular branch, that his duties are of a general nature in his department and that he is required to see his department and everything connected with it kept in shipshape condition. All this, however, constitutes but a part of a chief petty officer's duties. As a chief petty officer, you recognize these duties; but in paying due attention to the matériel, do not overlook your duties in connection with the personnel. Too many chief petty officers wholly neglect the fact that, in all probability, the most important part of their duty is the training and instruction of their subordinates. As a chief petty officer you

are an expert in the details of your department. Unless you recognize that it is your duty to *instruct your juniors* and unless you do *instruct them,* and unless you endeavor to inculcate in them the knowledge of how things should be done, of how they should conduct themselves, you will have failed in your duties. Too often petty officers direct inexperienced men of lower ratings to carry out certain orders, and then think no more about it; later, when it is found that the work has not been done; or has not been thoroughly done, or has been done improperly, they lay the blame on the junior. In such a case it is clearly evident that the petty officer has neglected his duty. Remember always that you are an instructor, and that the instruction of your juniors is one of your most important duties; that it is your duty to instruct them not only in the details of the profession, but also in regard to their general conduct or demeanor on board ship. Not only is it your duty to instruct them; it is also your duty to enforce compliance with such instructions, and see that they are *trained* to do their duty *properly, thoroughly,* and to observe the rules and the regulations of the service.

16. TWOFOLD NATURE OF DUTIES.—Duties in the Navy are twofold in nature. Not only must you be expert in your specialty and be able to instruct others in that specialty; but in addition to this, do not for a moment forget the military side of your life. As a chief petty officer it is more incumbent upon you to remember this than it would be were you in one of the lower ratings. For example, if you happen to be a chief machinist's mate, there is no reason why you should not be able to march a squad of men in a military manner, halt them, and face them smartly. Because you may be a chief yeoman, there is no reason why you should neglect boat etiquette, or neglect to salute your seniors. If you happen to be a chief pharmacist's mate, that is no reason why you should not know and observe uniform regulations, or orders concerning ship routine. Every chief petty officer should take pride in *knowing,* in *observing,* and *in requiring others under him to observe* all of these details of ship life. *Simply because you may not happen to be in the seaman branch, do not allow yourself for a moment to think that your duties do not extend to the military side of your profession.*

17. LET OFFICERS JUDGE YOUR PROFICIENCY.—It frequently happens that, when the time draws near for a chief petty officer to receive a permanent appointment, or when he desires a letter of commendation preparatory to taking an examination for warrant, he becomes very enthusiastic and eager to

expound his points of excellence. Let your conduct as a chief petty officer be such that instead of being forced to explain your points of merit, your officers will already know them. Let your officers be the judges of your proficiency. An officer knows no greater pleasure than that of being able to give an unqualified recommendation to a man who has served under him. Your letter ought to be based on your excellent work as a chief petty officer rather than upon the execllent manner in which you plead your case when you come up for promotion.

18. SUMMARY.—(1) You have a position in which you must have *expert knowledge* of every detail that applies to your branch of the profession.

(2) Your duties in training and instructing men of lower ratings are even more important than your duties in connection with the matériel.

(3) Your conduct must be entirely above reproach, and your daily life such as to set an example both from a personal as well as from a professional point of view.

(4) Whatever may be your special branch, always bear in mind the military side of the life. Comply strictly with the formalities of military life and require the same of your juniors.

(5) Yours is a position of honor and responsibility. Do your work from a *sense of duty*. Be thorough in all you do, and require of your subordinates thoroughness and military exactitude.

SPECIAL SUBJECTS FOR ALL CHIEF PETTY OFFICERS, IRRESPECTIVE OF THEIR SPECIALTY.

All chief petty officers of the seaman branch, irrespective of their specialty, must have a thorough knowledge of the following subjects; and all chief petty officers, of every branch, must have a thorough knowledge of such of the following subjects as are not obviously intended for the seaman branch only.

1.

THE SPECIAL SUBJECTS FOR ALL PETTY OFFICERS.

See Part III of the Manual.

2.

ARITHMETIC, READING AND WRITING.

A candidate for advancement to the rating of chief petty officer must be able to read clearly and to write intelligibly. He must understand the first four rules of arithmetic; he must be able to convert decimals into fractions, and fractions into decimals.

3.

SERVICE PRIOR TO ADVANCEMENT.

Petty officers, first class, are not advanced to the rating of chief petty officer (even when a vacancy exists) without the approval of the Bureau of Navigation. Men will not be advanced to chief petty officer during first enlistment, but a man toward the completion of his first enlistment may be recommended for chief petty officer, with a view to his advancement upon re-enlistment, if a vacancy exists.

4.

QUALIFICATIONS FOR PERMANENT APPOINTMENTS AS CHIEF PETTY OFFICERS.

The Bureau of Navigation issues permanent appointments to chief petty officers only. Such permanent appointment carries with it an increase of pay.

Candidates for permanent appointment as chief petty officers must be citizens of the United States, and, except chief pharmacists' mates, must have had sea service in a cruising vessel as a chief petty officer in the rate in which permanent appointment is sought, for at least one year. Service on vessels which do

practically no cruising, such as those assigned to Naval Militia organizations and reserve ships is not considered sea service.

Their records must show an average of 4.5 in proficiency and conduct for at least two years, and they must have shown in themselves good examples of subordination, courage, zeal, neatness, attention to duty, a practical knowledge of the regulations and orders relating to their duties, and an earnest endeavor to maintain good order and discipline in the command to which they are attached.

Chief petty officers must be leading men of strong character, thoroughly familiar with the particular duties of their respective ratings, and fully capable of taking charge of men at drills, of controlling work, of planning details for the best employment of the force available, and of maintaining the discipline expected from chief petty officers.

The board of officers carefully examine the candidates to determine their manual and mental capabilities. Previous service, together with such *official* records as may be available, will be carefully scrutinized and noted in making up averages of fitness. General bearing, personal qualifications, and conduct records must be examined with special care in the effort to procure only men of particular merit in these positions.

Candidates for permanent appointment shall not present letters of recommendation from officers, and no letters of this sort will be considered by the board.

A report of insobriety or unexcused absence over or without leave shall disqualify any man for an appointment or permanent appointment as chief petty officer for at least one year after date of offence.

5.

CHIEF PETTY OFFICERS DETAILED AS INSTRUCTORS OF APPRENTICE SEAMEN AT NAVAL STATIONS.

Chief petty officers to be eligible for detail as instructors of apprentice seamen at naval stations entitling them to the benefit of extra pay—ten dollars per month in addition to the pay of their rating—must be citizens of the United States; they must be serving under continuous service, they must hold permanent appointments as chief petty officers. At the time of their detail they must be not more than 45 years of age. Exception to this may be made in the case of men who reach this age while so detailed and upon recommendation to the Bureau of Navigation. They must be military in bearing and deportment, correct in dress, and neat in personal appearance, of good judgment and tact in handling recruits, and shall have

served at least three months' probationary service at the station as instructor of apprentice seamen.

A chief petty officer who fulfills these conditions and who embodies in himself the qualities of the higher types of enlisted men; namely, devotion to duty, energy, zeal, and intelligence, may be recommended for the detail. If so recommended, he will be examined by a board of three line officers appointed by the commandant or the commanding officer of the station ship. Such boards, in addition to satisfying themselves that each candidate fulfills the above requirements, will examine him orally in

Seamanship:

(a) Practical work in the sail loft with palm and needle.

(b) Practical work in rigging loft; knotting and splicing, including splicing of wire rope, hitches, bends, strapping blocks.

(c) Practical handling of boats under oars and sails, running and making fast lines, moorings.

Ordnance:

(a) Practical knowledge of the manual "Landing Force and Small Arms Instructions."

(b) Assembling and drilling under arms a company of infantry and two pieces of artillery.

(c) Thorough knowledge of service arms.

(d) Thorough knowledge of instructions governing the small arms target ranges and galleries.

(e) Thorough practical knowledge of sight-setting and ability to *instruct* in small arms marksmanship.

Signals:

The examination must show a thorough knowledge of all systems of signaling used in the service, day and night.

First Aid:

The examination must show a thorough knowledge of the requirements in first aid to the wounded.

An applicant who has passed a satisfactory examination in accordance with the foregoing provisions may be given an appointment signed by the commandant or commanding officer of the station ship, such appointment to continue in force for one year from date, unless revoked for cause or by reason of transfer from station.

The complement of instructors entitled to the extra $10.00 per month allowed a station will be 1 for every 50 apprentice seamen, based on the following complements:

Training station, Newport	1,250
Training station, Norfolk	850
Training station, San Francisco	850
Training station, Great Lakes	850

6.

UNIFORMS FOR CHIEF PETTY OFFICERS.

1. *Blue dress.*—Blue cloth coat; blue cloth trousers (white trousers may be prescribed when officers are in blue with white trousers); blue cap (white cap shall be worn with white trousers, and it may be prescribed when officers are in blue with white caps); blue waistcoat; white shirt; white collars and cuffs; cravat; black shoes (white shoes with white trousers).

2. *White dress.*—White coat; white trousers; white cap; white shirt; white collar; cravat; white shoes.

3. *Blue undress.*—Blue flannel or serge coat; blue flannel or serge trousers (white trousers may be prescribed when officers are in blue with white trousers); blue cap (white caps may be prescribed when officers are in blue with white caps); white caps shall be worn with white trousers; white shirt and collar, with cravat (blue flannel shirt may be prescribed); black shoes (white shoes may be prescribed with white trousers for chief petty officers, except when they are employed in work for which white shoes are inappropriate); blue flannel or serge waistcoat is permitted; clothing that has been long in use as dress may be worn for undress.

4. *White undress.*—Same as for white dress, but clothing that has long been in use may be worn; black shoes (white shoes may be prescribed for chief petty officers, except when they are employed in work for which white shoes would be inappropriate).

5. *Working dress, blue or white.*—Same as undress; but chief petty officers may lay aside the coat, wearing the blue flannel shirt, if the uniform is blue.

The "Uniform Regulations" contains detailed instructions in regard to uniform.

7.

THE METHODS BY WHICH A CHIEF PETTY OFFICER CAN OBTAIN EXACT KNOWLEDGE.

The average intelligence and executive ability of two men being equal, the man who knows exactly where to find detailed and accurate information in regard to a given subject is always of a great deal more value than the man who has a general fund of information in regard to a number of subjects but who does not take the trouble to obtain *exact knowledge* in regard to the subject under consideration.

No matter how great a man's experience has been in the practical line of his duties, there will come a time when he

will have to refer to a text book in order to obtain exact information.

In the following books a chief petty officer will find exact information in regard to all the subjects he is required to know:

1. Navy Regulations and Naval Instructions.
2. Uniform Regulations.
3. Gunnery Instructions. (Confidential.)
4. The Deck and Boat Book.
5. The Landing Force and Small Arms Instructions.
6. The Ship and Gun Drills.
7. The pamphlets published by the Bureau of Ordnance to which reference has been made in Part III of the Manual.
8. Manuals published by other bureaus. Steam Engineering, Construction and Repair, Medicine and Surgery, Supplies and Accounts.
9. Manufacturers of the various mechanism used in the ordnance and electrical departments are usually very glad to send catalogues and descriptions of their gear, upon application. These catalogues often contain very valuable information.

8.

THE DUTIES OF JUNIOR DIVISIONAL OFFICERS.

It will often happen that a chief petty officer may be called upon to perform some, or all, of these duties. The average chief petty officer has a very good general idea of what the duties of a division officer are. His exact duties are given in the Navy Regulations, Articles 2621 to 2625, inclusive; and in the Naval Instructions, Articles 1821 to 1826, inclusive.

9.

PRECEDENCE OF CHIEF PETTY OFFICERS.

Chief petty officers take precedence according to the following classification: Chief masters-at-arms, Chief boatswain's mates, Chief gunner's mates, Chief turret captains, Chief quartermasters. The precedence of two, or more, chief petty officers holding the same rate is determined by the date of their rates. If of the same date, their precedence is determined by their respective lengths of service. The precedence of chief petty officers of the artificer and special branches is given in Part V of the Manual.

10.

THE DUTIES OF THE OFFICER OF THE DECK.

All chief petty officers should have a good general knowledge of the duties of the officer of the deck, and his responsibilities. Though many of these duties may be learned by observation, accurate instructions in regard to them may be found in the Navy Regulations, Chapter 24, and the Naval Instructions, Chapter 16. A chief petty officer is in direct line for advancement to warrant rank, and all warrant officers should be fully prepared at any time to stand watch as officer of the deck.

11.

WARRANT OFFICERS.

1. Boatswains, gunners, machinists, carpenters, sailmakers, pay clerks, and pharmacists are warrant officers. They take precedence of each other on the active list of the Navy according to the date of their warrants, and in case the warrants of two or more of them are of the same date, then according to the order in which their names are borne upon the official Navy Register, as kept in the Navy Department. They take precedence next after midshipmen, and ahead of all mates.

2. After six years from date of warrant, boatswains, gunners, machinists, carpenters, sailmakers, pay clerks, and pharmacists, if duly qualified, shall be commissioned chief boatswains, chief gunners, chief machinists, chief carpenters, chief sailmakers, chief pay clerks, and chief pharmacists, respectively, to rank with but after ensigns, and shall be designated commissioned warrant officers. On the active list of the Navy, these commissioned warrant officers take precedence after ensigns; they take precedence of each other according to the dates of their warrants. In case the warrants of two, or more, of them are of the same date, they take precedence according to the order in which their names are borne on the Navy Register. All commissioned warrant officers on the active list, with creditable records, after six years from date of commission, receive the pay and allowances of a lieutenant (junior grade); and all commissioned warrant officers on the active list, with creditable records, after 12 years from date of commission, receive the pay and allowances of a lieutenant.

3. Chief boatswains, chief gunners, chief machinists, boatswains, gunners and machinists are classed as line officers of the Navy. Other commissioned warrant officers and warrant officers are classed as staff officers. So far as succession to

duties on board ship outside the engineer department are concerned, chief machinists and machinists are restricted to the performance of engineering duty only.

4. Such commissioned warrant officers as are, or may be, retired with the rank of lieutenant (junior grade), take precedence next after officers having the rank of lieutenant (junior grade). Such boatswains, gunners, carpenters, and sailmakers as are retired with the rank of the next higher grade take precedence with other officers of the Navy next after ensigns.

12.

MATES

are rated, by authority of the Secretary of the Navy, from seamen and ordinary seamen. Mates have no relative rank, but they take precedence of all petty officers, non-commissioned officers of the Marine Corps, and enlisted men, and in their own grade according to the dates of their appointments.

13.

PROMOTION TO WARRANT RANK.

Appointment as boatswains, gunners, machinists and carpenters are made after competitive professional examinations before boards consisting of at least three commissioned officers. When candidates from the naval service and from civil life possess equal qualifications, preference is given to those from the naval service.

An outline of the exact requirements necessary for recommendation and appointment as a warrant officer will be given in the following chapters, in the case of each rank. Attention is called here to the following requirement that is uniformly necessary for advancement to any of these warrant ranks:

The candidate must be able to read and write with facility; must understand the first four rules of arithmetic, and proportion; must be able to keep a correct account of stores; and must be thoroughly conversant with all drills and regulations of the Navy pertaining to the duties of his rank.

Commissioned warrant officers, warrant officers, mates and petty officers shall have, under their superiors, all necessary authority for the due performance of their duties, and they shall be obeyed accordingly.

Q. Is it necessary to be a commissioned warrant officer before you may be designated for promotion to the rank of ensign?

A. No. So far as rank is concerned, boatswains, gunners and machinists, provided they have served not less than 4 years as warrant officers, are equally eligible with chief boatswains, chief gunners and chief machinists.

14.

PROMOTION TO COMMISSIONED RANK.

The Navy Regulations allow the promotion of 12 warrant or chief officers to the grade of ensign in the Navy every year. The candidates are selected from the chief boatswains, chief gunners, chief machinists, boatswains, gunners and machinists of the Navy. No one shall be appointed an ensign under this regulation unless he has served at least four years as a warrant officer. He must be under 35 years of age, and must be recommended by his commanding officer. The examination is competitive.

15.

THE RULES OF THE ROAD.

All chief petty officers must be familiar with the Rules of the Road. These are given in detail in Chapter 41 of the Navy Regulations.

16.

HONORS, DISTINCTIONS, SALUTES AND CEREMONIES.

All chief petty officers must be thoroughly familiar with these subjects. Detailed instructions are given in Chapter 12 of the Navy Regulations.

17.

THE GUARD SHIP.

1. DUTY OF GUARD SHIP.—In each division of ships there is detailed a guard ship that performs the guard duty from 8 a. m. to 8 a. m. The guard ship is subject to call for any duty that may be required of it during its tour of duty. Except when there is a flag officer present, the guard ship performs the boarding duty required by Navy Regulations.

2. THE RELIEF GUARD SHIP is usually charged with the performance of certain duties in regard to the shore patrol and the beach guard.

3. THE GUARD BOAT.—The guard ship has ready for service at all times, day and night, a boat to be known as the "guard boat." This boat will, if practicable, be a power boat. It will

be used for such extra trips for guard mail and for such other purposes as the Division Commander, or the senior officer present, may direct.

4. HOW DISTINGUISHED.—The guard flag is hoisted at the fore, between sunrise and sunset, by the ship charged with the guard duty of a division. From sunset to sunrise the guard ship displays a red light at her fore truck. The guard flag is not hoisted, nor is the red light shown by a flagship, or a vessel of the senior officer present, to indicate that she has the guard duty.

18.

GUARD MAIL.

1. MAIL TRIPS.—Each ship of a division sends a boat to its division flagship to deliver and receive official mail at designated hours during the day. Each division flagship sends a boat to be alongside the fleet flagship to deliver and receive official mail at designated hours. Any extra guard mail trips that may be necessary are made by the boats of the guard ships of the different divisions. It is customary to use pulling boats for afternoon trips, if the weather and other circumstances permit. Boats carrying guard mail display the guard flag in the bows. It is usual to require the mail boats of the guard ships of the several divisions to collect and deliver, while en route to and from their division flagships, the mail of any auxiliaries that may be berthed abreast their respective divisions, or in the vicinity thereof.

2. It is customary to require a line chief petty officer (of one of the following ratings—chief boatswain's mate, chief gunner's mate, chief turret captain, or chief quartermaster) to take charge of the guard boat, or the mail boat.

3. DUTY OF A CHIEF PETTY OFFICER MAKING A MAIL TRIP.—Make yourself familiar with the time the mail boat is liable to be called away. See that you shift into the required uniform—the uniform of the day and the service revolver belt—in time to allow you to call at the captain's office (and, if on a flagship, at the admiral's office) for official mail that is to leave the ship. When you have all the mail, report to the officer of the deck that you are ready to make the trip. Embark in the mail boat and shove off when ordered to do so by the officer of the deck. Before shoving off, make sure that the coxswain of the boat has attended to his duty in regard to having the boat clean and the crew in uniform. See that the bowman ships the guard flag as soon as you shove off. When approaching the division, or fleet, flagship, go to the port gangway, unless otherwise

directed by the officer of the deck, or in case the weather is so heavy that the lee gangway must be used (supposing the starboard gangway to be the lee gangway). If there are a number of boats from other ships waiting to go alongside, lie off until the officer of the deck calls your boat alongside. Report to the officer of the deck that you come on board with his permission, and take your mail in person to the flag office. Collect any outgoing mail. Request the officer of the deck to have your boat called alongside. Shove off with his permission. Ship the guard flag, which you must see unshipped whenever you go alongside a vessel. Return to your ship and deliver mail to the captain's office.

19.

THE BEACH GUARD.

1. PURPOSE.—The beach guard is landed whenever it is considered desirable to maintain a force on shore merely to assist the beachmaster in preserving order at the landings.

2. COMPOSITION.—As a rule, the beach guard consists of a junior officer and a chief petty officer from that ship of each division that becomes relief guard ship at 8 a. m. The tour of duty at the landings is usually from 5 a. m. till midnight, with a change of detail at noon.

3. THE BEACHMASTER.—The senior officer of the guard is known as the beachmaster. He is responsible that the guard performs its duties efficiently. A "beachmaster's note book," containing detailed instructions should be furnished to the beachmaster every morning by the senior officer present. The beachmaster should return this book at the completion of each tour of duty.

4. THE DUTY OF THE BEACH GUARD.—It is the duty of the beachmaster to cause all boats to approach the landing from the same direction in order to prevent congestion and confusion. Boats will land in the order of their arrival. Boats should not be permitted to lie at landings longer than it is necessary to handle passengers or freight. Liberty and other parties of enlisted men should be formed in ranks at a convenient distance from the landing; they should be marched to the landing when the boats are ready to receive them. Boats should lie off until the men are formed, ready to embark. It is strictly forbidden for steamers to sound their call letters at, or near, shore landings, or to make any sound signal whatever except such as may be necessary to ensure safety, in accordance with the rules for preventing collisions. The beach guard should be equipped with means for signaling if the landing is

in sight of any of the ships of the fleet, or there is any way by which a message can be relayed to the fleet. One of the most important duties of the beach guard is to arrest any drunken or disorderly men and send them back to their ships. The beachmaster makes a written report in every such case. No person on duty with the beach guard shall, at any time, or under any circumstances, partake of, or indulge in, any form of intoxicating liquor or other intoxicant while on such duty. A violation of this order will be a general court-martial offence. Uniform for chief petty officers—the uniform of the day, leggings and web belts; they may be ordered to carry revolvers.

20.

THE SHORE PATROL.

The duties of the shore patrol are given in the chapter for petty officers in Part III of the Manual. Petty officers are detailed for duty with the shore patrol. It might happen that a chief petty officer would be detailed for duty with the patrol officer instead of a junior officer. A chief petty officer so detailed should carefully read the instructions for the shore patrol as given in the regulations of the fleet to which he is attached.

21.

GENERAL DRILLS.

All chief petty officers must understand every detail of the instructions for general drills. These details will, of course, vary for the different ships. Complete instructions are posted on the bulletin boards, and chief petty officers—and everyone else on board ship, as well—will make themselves thoroughly familiar with every detail.

General drills have been discussed in Part I of the Manual. It is now proposed to give a few notes on Clearing Ship for Action (which is an evolution rather than a drill), and the Fire and Rescue Party, as these subjects were not fully discussed in Part I.

22.

NOTES ON CLEARING SHIP FOR ACTION.

1. AT THE COMMENCEMENT OF HOSTILITIES the ship will land at the Navy Yard all loose and inflammable articles and furnishings, including chests, spars and boats which can be spared.

2. FOR EXERCISE, articles which would otherwise be put on shore will be labelled "overboard." Articles which are so

essential to a ship that they cannot be left on shore—such articles, for example, as are required in daily use, and would be valuable after an action—will not be labelled "overboard"; but they must be so disposed as to provide against fire and splinters and insure an uninterrupted service of the battery.

3. THE TIME ELEMENT is second only in importance to thoroughness in preparing for battle; and if all preparations have been made, the time required for the evolution is a measure of the smartness and efficiency of the crew. The crew will work first for *thoroughness,* and then to reduce the time; but haste to report his division ready should never, under any circumstances, cause an officer or a man to neglect details and precautions which would be necessary if the ship were going immediately into action.

4. THE FOLLOWING ARTICLES SHOULD BE LANDED—for exercise, marked "*overboard.*"—All chests on the forecastle, signal deck, main and gun decks (except signal chests), bulletin boards, wooden desks on gun deck, gangway ladders and fittings, bookcases for crew's library, pianos, chart house woodwork, most of the furniture of officers' staterooms, messrooms and offices, superfluous clothing, all boats (except a whaleboat and the gig), wash-deck lockers on main deck, cradles on the boat deck, and wings of the flying bridge when unshipped.

5. THE FOLLOWING INFLAMMABLE ARTICLES, IF KEPT ON BOARD, MUST BE STOWED BELOW.—All woodwork; clothing, mattresses and bedding; all books and papers; coaling booms. All linoleum below the protective deck will be removed. All inflammable material outside of armor on the forecastle, signal, main, gun and berth decks will be reduced to a minimum and the remainder will be in readiness to be passed behind armor, or thrown overboard.

6. THE CALL is the boatswain's call, "All hands clear ship for action."

7. OFFICERS.—The executive officer, under the commanding officer, has general charge. The gunnery officer and the ordnance gunner inspect the battery and see that all dry gun cotton primers and detonators are sent below. The navigator usually relieves the deck. All division officers are with their divisions. Division officers have previously made out detailed bills for duties within the limits of their divisions. All work will be performed under the supervision of the division officers, divisions working within the limits assigned to them for cleaning, unless they receive instructions to the contrary. *The greatest care will be taken to see that nothing interferes with*

the training of any gun or turret, or with the ship control or fire control.

8. EVERY PERSON WILL GO QUICKLY AND QUIETLY TO HIS station, and all work should be performed expeditiously, but with absolute thoroughness, in silence, and without creating any unnecessary confusion.

9. DIVISIONAL DUTIES:

Provide grapnels for clearing propellers.

Unship jackstaff and send it below.

Unship flagstaff and lash it in waterway.

If action is to be at anchor, put springs on chain.

Close armored hatches and secure them.

Put preventer slings on signal yards, Ardois cables, and wireless aerial.

Furl awnings, if spread, and send them to sail room.

Turn down and lash awning stanchions, rail stanchions, boat and anchor davits.

Secure the 3-inch field guns and carriages on main deck.

Send mooring swivel to chain locker.

Unreeve ridge ropes, foot ropes and life lines; send them below.

If not on soundings, secure anchors with controllers, stoppers, and extra lashings; unbend chain at 5-fathom shackle and send below.

If on soundings, do not unbend chain, but be ready to do so.

Unship and send below the turret gun bucklers and tompions.

Set up mushroom cowls of ventilators.

Send coaling booms to lumber room.

Prepare both collision mats for use. Put reeving lines in place under ship.

Unrig lower booms and lash booms in place on side, sending the gear below.

Lower king posts for coaling booms. Send them to drum rooms, behind armor.

Lower all boats except the whaleboat and gig, making them fast to each other, bow and stern, and anchor them at the end of the line. Lash gear in boats.

Secure wire hawsers and reels on main deck.

Lower the boat cranes; secure them on deck.

Connect up all hose ready for leading out, and put on the nozzles.

Provide two charges for each 5-inch gun (or gun of the torpedo defence battery); load turret ammunition cars, also have one charge ready in lower handling room.

Send all chests not containing inflammable matter below, and tag "overboard" such as would be sent ashore or thrown overboard.

Tag "overboard" all chests containing gasoline, varnishes, alcohol, turpentine, and other inflammables; but do not remove them from their stowed positions unless they interfere with the training of the guns.

Close all air ports, and, at night, close air port bucklers.

Tag "overboard" all furniture, refrigerators, pianos, mess tables, benches, bookcases, punts, loading machines, and wash deck lockers.

Take down and stow below the following: wash deck hose, coal scuttle gratings, hatch and cargo davits, bulletin boards, sub-caliber attachments, all tools except one wrench for each hatch; carpenter's, plumber's, and sailmaker's benches and chests, emergency rations, spare water casks and breakers, all ditty boxes above the berth deck all buckets, rain clothes and clothes out of lockers, rifles, manila hawsers, sight boxes, all unnecessary gear from galleys, bakeries and pantries.

Fill all magazine buckets, water cans, gun buckets, and gun tubs with fresh water.

Provide metal buckets for use of reserve crews in fighting fire.

Test all firing circuits and see that all guns are in every respect ready for firing.

Secure portable coaling chutes behind armor.

Secure saluting guns.

Mark "overboard" wooden 5-inch gun shutters.

Prepare battery for use.

Test all hand and electric gear and ammunition hoists.

See magazine lights burning.

Have power on turrets.

Strike designated searchlights and searchlight controllers with their cables below.

10. DUTIES OF THE POWDER DIVISION.—The lamplighter sees all oil lamps filled and in place ready for use.

Prepare diving apparatus for immediate use, with all air hose ready.

Have leak stoppers ready for use; open boxes and station men (carpenter's gang) by them.

Shut off louvres on berth deck outside of armor.

Close all gate valves and sluice valves, and all water-tight doors and hatches except those that are necessary for ammunition supply.

Open magazines, test hoists and have them ready for use.

See magazine and passage lights burning.

11. THE TORPEDO DIVISION.—Put on war heads and exploders as ordered. (For exercise, use exercise heads.)

Make ready all gear connected with the service of the torpedoes.

Charge torpedoes in tubes with full pressure. Charge accumulators.

Adjust torpedoes for full run, with gear set to sink at the end of the run. (For exercise, set torpedoes to come to surface at end of run.)

12. ELECTRICIANS.—Start dynamos necessary for full power; have others warmed up and ready to start.

Shut off blowers forward and aft outside of armor. (Do not shut off blowers when clearing ship for exercise.)

Test interior communications of fire control.

Send designated searchlights and controllers below, working with men of deck divisions.

Send below all globes in officers' quarters, in offices, and all unnecessary lamps and globes.

Have portables ready and see battle lanterns in place and tested.

13. QUARTERMASTERS AND SIGNALMEN.—Test steering gear and see that all is ready to shift as ordered.

Round up battle flags ready to break. Shift colors to peak.

Have full set of signal halliards rove off.

Open air ports in chart house; secure doors open.

Disconnect and stow Nicholson Log below. (For exercise, tag it "overboard.")

Send below the bridge awnings, all canvas covers, sounding machine (when not on soundings), and peloruses.

Send below all compasses and binnacles. (Not done for exercise.)

Send below chronometers, chart books, navigational instruments, under direction of the navigator. (Not done for exercise.)

Have log books, confidential papers, and cipher codes ready for destroying, if ordered.

Send below all unnecessary flags.

Remove necessary flags, halliards, and speed cones to the battle signal station, in the lee of the conning tower.

14. FIRE CONTROL PARTY.—Make ready all parts of the fire control system.

15. PAYMASTER'S DIVISION.—The paymaster sees that all public funds and important documents are ready to be cared for, or destroyed as may be necessary.

Put out fires in bakery and galley. (Not done for exercise.)

Stow in storerooms articles from issuing room, canteen and office.

16. SURGEON'S DIVISION.—Duties as designated by the senior medical officer.

17. ENGINEER'S DIVISION.—Men detailed to the powder division report there at once.

If not underway, turn steam on steering and main engines and anchor engine, and make all preparations for getting underway. (Not done for exercise.)

Light fires in dead boilers and spread fires in others. (For exercise, prime all furnaces.)

Hoist ashes.

Test whistle and siren.

See all armor gratings in place. Close all watertight doors and hatches except those in use during action.

Put all pumps except one on the main drain; put that pump on the fire main.

Stop all unnecessary auxiliaries and close stop valves to all pipes leading above protective deck as soon as they can be dispensed with.

Be ready to work boiler stop and valves from berth deck passages, and to open coal bunker flood cocks. Station men there.

Before going into action, all articles which might be displaced by a collision shall be secured, or so disposed that no injury can be done to machinery or to any person in the engineer department.

NOTE.—THE ASSIGNMENT OF DUTIES AS GIVEN ABOVE IS IN NO WAY BINDING. THIS FEATURE VARIES ON DIFFERENT SHIPS. THE ABOVE INSTRUCTIONS ARE TAKEN PRACTICALLY VERBATIM FROM THE BILL OF A BATTLESHIP. THEY GIVE A GOOD GENERAL IDEA OF ALL THE DETAILS THAT MUST BE LOOKED AFTER IN THE MOST IMPORTANT EVOLUTION OF CLEARING SHIP FOR ACTION.

SEE ALSO SHIP AND GUN DRILLS, U. S. NAVY, ARTICLES 201 TO 209.

23.

THE FIRE AND RESCUE PARTY.

1. THE FIRST AND SECOND WHALEBOATS are usually carried at the davits on the main deck. Consequently, they are often designated as the boats for the "fire and rescue party."

2. IF THESE BOATS ARE NOT AVAILABLE, the officer of the deck designates other boats for the service. In an emergency, "away all boats" may be sounded, and all available boats equipped and sent on service.

3. IF AT ANCHOR AND THE CUTTERS ARE AT THE BOOM, OR CAN BE READILY LOWERED, it is preferable that the cutters be substituted for the whalers, provided the service and time element would seem to warrant it.

4. THE CALL.—In daytime the call will be "Away Fire and Rescue Party," piped by the boatswain and his mates, who, at the same time, pass the word as to what boats are to be used. The word is followed by the bugle calls for the designated boats.

5. AT NIGHT the "general alarm" will be sounded followed by the calls given above.

6. THE BOATS CALLED AWAY will be manned at once by their regular crews and their assigned supernumeraries. The boats must be properly equipped and manned, and shoved off from the side as soon as possible.

7. A STEAMER should take the boats in tow as soon as possible.

8. PURPOSE.—The fire and rescue party will be organized and equipped (a) to assist a vessel on fire; (b) to rescue people from her or from any shipwrecked vessel; (c) to prevent the spreading of flames to shipping which may be endangered; (d) to render similar assistance to property endangered on shore.

9. THE ENTIRE EQUIPMENT SPECIFIED BELOW WILL ALWAYS BE PROVIDED AT THE BOATS, in accordance with the assignments, while the crew of each designated boat clears it away, lowers and prepares it for service under the orders of the boat officer and the direction of the senior boatswain's mate of the division to which it belongs. (This boatswain's mate goes with the boat as an assistant to the boat officer.) That part of the equipment that may be used to advantage in the special emergency will then be passed into the boats.

10. THE DIVISION OFFICER of each deck division prepares the individual details for the fire and rescue party for his own division. These details will provide for the manning and the equipping of the boats of his division as "fire and rescue boats." As a rule, the first running crew of each boat is detailed intact as the boat crew for the fire and rescue party. From the reserve crew the details for providing and the supernumeraries will be detailed. Men should be carefully instructed in their duties.

11. THE FOLLOWING ARTICLES WILL ALWAYS BE PROVIDED.—First whaleboat (or designated boat); all boat gear except spars and sails, which will be passed out if time permits; boat box 2 circular life buoys; 1 grapnel with chain and 5 fathoms o

rope; 2 axes; 6 buckets (3 with lanyards); 1 crowbar; 2 heaving lines; 1 life belt for each member of crew; 2 hand grenades; 1 jigger; 2 straps.

Second whaleboat (or designated boat): All the above-mentioned gear, and, in addition, the following: 1 handy billey, 1 suction hose (3 lengths), strainer, 3 sections of fire hose, 1 nozzle, 1 spanner, 1 5-inch line, 1 reducer.

The following articles are supplied by divisions other than the division manning the boat:

ARTICLE.	SUPPLIED BY
Medical outfit	Medical officer.
Gun cotton outfit (if ordered)	Gunner and torpedo gang.
Unshackling tools and top maul	Blacksmith (deck).
Signal hand flags	Signalmen.

12. IF ORDERED, THE CHIEF BOATSWAIN OR BOATSWAIN, A CARPENTER'S MATE AND A BLACKSMITH with necessary unshackling tools will go in one of the boats.

13. IF THE PARTY IS SENT FOR DEMOLITION WORK, either ashore or afloat, a gun cotton party will go in one of the boats.

MISCELLANEOUS QUESTIONS FOR EXAMINATION OF CHIEF PETTY OFFICERS, IRRESPECTIVE OF THEIR SPECIALTY.

1. State the general contents of the various service drill books.

2. What are the details of the physical drills, with and without arms?

3. What are the regulations in regard to smoking, leaning on the life line, hanging articles on life lines, spitting on the deck or over the side, duties of sweepers in regard to ladders and spit kids?

4. What is the precedence of chief petty officers?

5. What is a saluting ship?

A. Ships of the Navy shall fire salutes when commanded by a captain or commander, and armed with four, or more, light quick-firing guns of practically the same size and volume of report, mounted on the hull and suitably placed. In case for any reason such a vessel is unable to salute a foreign power or a foreign officer, the circumstances must be explained on the spot to the representative of such foreign power. In cases where, from any special circumstance, the omission to salute cannot be explained without giving offence to a foreign power, or officer, salutes shall be fired by any ship which can possibly do so with safety, whether included in the foregoing category or not.

6. Who is the commander-in-chief of the Army and the Navy?

7. How many guns in the national salute?

A. Twenty-one.

8. What is the interval between guns in all salutes?

A. Five seconds.

9. Describe the flags of the President, of the Secretary of the Navy and the Assistant Secretary of the Navy.

10. Who are ambassadors, ministers, consuls?

11. Describe in detail the ceremonies that occur when a flag officer leaves his ship officially.

12. How is the fact that the flag officer is about to leave officially indicated to the fleet?

13. What vessels exchange honors?

14. If you are on deck when honors are rendered, what should you require your subordinates to do?

15. If no band is present when honors are rendered, when do you salute?

A. When abreast the other ship's colors.

16. How are vessels of the third rate saluted? Vessels under third rate and auxiliaries flying a pennant?

17. Would you exchange honors with a torpedo-boat destroyer? With a foreign destroyer?

NOTE.—The rendering of honors shall take place while the ships are overlapping, sounding "attention" when the jackstaff of one vessel passes the jackstaff or flag of the other and "carry on" when the quarter-deck of one vessel has passed the quarter-deck of the other.

18. Describe the following lights: Admiral's, Vice Admiral's, Rear Admiral's, Captain's, Flagship, Man-of-War.

A. Absence from the ship at night, with intention to return within 24 hours shall be indicated by white lights displayed at the peak in a vertical line as follows:

Admiral of the Navy	6
Admiral	5
Vice Admiral	4
Rear Admiral	3
Captain or commander appointed to command a squadron or division	3
Commander of a torpedo flotilla (not a flag officer)	1
Commanding Officer	1

But the commanding officer shall not show his light if the flag officer's lights are shown.

EVERY FLAGSHIP, when in port or when at sea in company with other ships, shall carry two white lights in a horizontal line

six feet apart, on the after side of the mainmast and about six feet below the lowest of the three absence lights.

AT NIGHT, when approaching an anchorage where men-of-war are likely to be found, all ships shall hoist at the peak two white lights in a vertical line. When at anchor in port, and an incoming vessel is sighted making this display of lights, United States ships at anchor shall answer such signal by hoisting the same display.

19. Rules of the Road. See list of questions given in Part III.

CHIEF MASTERS-AT-ARMS.

In addition to the SPECIAL SUBJECTS FOR ALL CHIEF PETTY OFFICERS, chief masters-at-arms must have a thorough knowledge of the following subjects:

"M-1."

The Duties of the Senior Master-at-Arms, as Given in the Navy Regulations.

"M-2."

All the Duties of a Master-at-Arms.

Both these subjects are covered in Part III of the Manual. The duties of the senior master-at-arms are given there because it may often happen that the senior master-at-arms on board ship may not be a chief master-at-arms.

In order to test the candidate's general knowledge and intelligence, questions on the order of the following are suggested:

Q. You are the senior chief master-at-arms of a battleship. The allowed complement of masters-at-arms is as follows: Two chief masters-at-arms, two first class, two second class, and three third class. Make out a detail assigning certain duties to each master-at-arms. Make sure that every duty required of masters-at-arms on the particular type of ship is covered. To make the question absolutely practical, the ship chosen should be the one upon which the candidate is serving.

CHIEF BOATSWAINS' MATES.

In addition to the SPECIAL SUBJECTS FOR ALL CHIEF PETTY OFFICERS chief boatswains' mates must have a thorough knowledge of the following subjects:

"B-1."

The Duties of the Boatswain, as Given in the Navy Regulations.

R. 3206. (1) The chief boatswain, or boatswain, shall act as an assistant to the first lieutenant, and shall perform such other duties as may be assigned him.

(2) In the absence of the chief boatswain, or boatswain, his duties shall be performed by the chief boatswain's mate.

I. 2301. (1) The chief boatswain or boatswain of the ship shall critically examine all boatswain's stores and spare articles received, and shall report any defect or deficiency of which he may become cognizant at any time.

Spare articles shall be tried in place to ascertain if they fit and are in all respects suitable for the purpose for which intended.

(2) He shall be accountable for the condition of all the equipment and stores of his department in use; and, for purposes of inspection, as directed by the commanding officer, he shall have access to such equipment and stores as are not yet issued for use by the general storekeeper of the ship.

(3) He shall exercise a careful supervision over the expenditure of his stores, exert himself to the utmost to prevent any waste or loss, and see that all issues are applied to the purpose intended. He shall be responsible for articles issued from storerooms for use with the intention of being returned.

(4) He shall, upon the discovery of any loss or deterioration of his stores, or damage to or defects in the ship, at once report the same to the first lieutenant.

(5) When the ship goes out of commission, he shall exercise great care that all his stores and articles of outfit are carefully tallied and properly stored without loss or injury.

(6) He shall be on deck generally during the day; also during the night when his services are needed.

(7) He shall report to the first lieutenant any repairs to rigging or other work in his department that he deems necessary.

I. 2302. The station of the chief boatswain, or boatswain, at quarters and at all hands shall be as the commanding officer may direct.

R. 2304. When the ship is placed out of commission, the chief boatswain or boatswain shall not be detached or transferred until the equipage, equipment, stores and supplies issued for use to the first lieutenant have been satisfactorily accounted for, and surveys covering shortages have been held and approved.

R. 1808. When at sea, the officer of the deck shall require the chief boatswain or boatswain, during the morning watch, to examine the condition of the chains, boats, boat booms, and rigging and report the result.

I. 2627. (1) The boatswain of the ship shall frequently examine the spars and rigging. Should he discover any signs of weakness or any defects, he shall report the same to the first lieutenant, and, if requiring immediate attention, to the officer of the deck.

(2) When at sea, in ships where it would be appropriate, he shall go aloft every morning and examine the rigging on each mast, reporting the result to the officer of the deck, and he shall pay particular attention to the securing of the anchors, boats and other movable articles.

(3) He shall satisfy himself that the ground tackle is always ready for use and in good condition. When at anchor, he shall see that nothing interferes with a readiness to veer, slip, or bring to the chain or let go the spare anchors.

(4) When stowing the hold and storerooms under his charge, he shall take care that such articles as may be needed in an emergency are kept accessible.

I. 2703. Hogging lines or chains for use with collision mats, or for other purposes, shall not be continuously kept under the ship's bottom.

I. 2026. The chief boatswain, or the boatswain, or, in the absence of this officer, the chief boatswain's mate shall report to the executive officer twice daily, at 8 a. m. and 8 p. m., the condition of the ship and her appurtenances, so far as his department is concerned.

The following articles of the Regulations apply to the duties of the Executive Officer, but the chief boatswain, or boatswain, is usually detailed to see that all the preliminary arrangements are carried out.

I. 2631. (1) The executive officer shall be responsible for the condition of the anchors, chains and moorings. He shall inspect and overhaul the chain cables whenever necessary, and see that they are properly marked and in good order. Once each month both bower chains, if they have been used, shall be ranged on deck to the 60-fathom shackle, and each link closely examined for defects.

(2) When moored, he shall keep himself informed of the condition of the hawse and, with the sanction of the commanding officer, shall have it cleared when necessary.

(3) In getting under way, at least two competent petty officers shall be detailed whose sole duty shall be to examine

critically each link of chain at it comes in for any sign of cracks in the welds.

(4) Before entering port, the executive officer shall see that all dispositions for anchoring are made, and that all the ground tackle is ready for use.

(5) If a cable has been slipped or parted, every possible means shall be employed to recover both the anchor and that part of the cable which is lost.

(6) Whenever an anchor is lost, or an accident experienced with a chain cable, a special report shall be made to the Bureau of Construction and Repair containing all possible information concerning the loss or accident, including speed of ship when anchor was let go, together with a statement as to whether the requirements as to care, preservation and inspection of anchors and chain cables have been carried out.

I. 2636. (1) All spare articles, stores, cables, hawsers, and sails shall be examined each quarter, and oftener, if necessary, in order to prevent deterioration and insure their efficient condition.

(2) At this quarterly examination particular attention shall be paid to the chain cables; they must be scaled and cleaned of rust and other foreign matter; the shackles, shackle bolts, forelock pins and swivels will be carefully examined and put in order; and such parts as require it will be coated with blacking, tallow or white lead.

APPOINTMENT AS BOATSWAIN.

R. 3313. (1) A candidate for appointment as boatswain must be under 35 years of age. He must have served not less than 7 years on board of cruising vessels of the Navy, and at least one year of that time as a chief petty officer or petty officer, first class, of the seaman branch, and must be serving as such and under continuous service at the time of his examination. The average of his marks taken from all service records (exclusive of the first year of service) must not be less than 85 per cent, and there must be on file, in the Bureau of Navigation, letters of recommendation from the commanding, executive and navigating officers with whom he has served.

(2) He must be able to read and write with facility; must understand the first four rules of arithmetic and proportion; must be able to keep a correct account of stores; must be familiar with the Rules of the Road; and must be thoroughly conversant with all drills and regulations of the Navy pertaining to the duties of a boatswain.

(3) He must be a thorough practical seaman, and thoroughly familiar with handling boats under oars and sails, handling boats in a surf, lowering and hoisting boats in a seaway, care and preservation of boats, and the equipment of the same; must understand cutting and fitting rigging according to regulations, the weighing, securing and transportation of anchors and the working of cables with modern appliances; the erection and securing of shears; the handling of purchases; and masting ships and securing yards. He must be thoroughly familiar with all methods of signaling in use in the Navy.

"B-2."

All the Subjects Given in the Manual for the Ratings of Coxswain and Boatswains' Mate.

See Part III of the Manual.

"B-3."

Seamanship.

All the details of handling boats under oars and sail, and the ability to drill enlisted men at all forms of boat drill.—Hanging lines under all circumstances.—Supervising the lowering and hoisting of boats.—Handling heavy weights.—Blocks, tackles and proper leads.

The Deck and Boat Book will be of value in preparing for questions under this heading.

The following questions are given as examples of practical questions in seamanship:

Q. State what preparations you would make for weighing anchor?

A. Ask the officer of the deck for steam on the anchor engine. Also ask him for a man to run the anchor engine and blacksmith to test the chain. Send chain tierers below. Lead out hose to wash off chain. Have man stand by with grapnel to pick up the anchor buoy. Provide shackling tool box with tapping tool to cup up forelock pins in case they are found to be loose upon heaving in. Have red and white paint and marking wire on hand to repaint and renew markings on chain when heaving in. When water has been worked out of cylinders of anchor engine, connect up capstan, come up friction and, heave in enough to take strain off stoppers. Take off stoppers, and report to the officer of the deck, "Ready for heaving in."

Q. What reports does the officer forward make to the office on the bridge when the anchor is being weighed, and what do they mean?

A. 1. Keep him informed how the chain is "tending."

2. "Anchor is at short stay, sir." That is when the chain tends in about the same direction as a foretopmast stay would have.

3. "Anchor is up and down, sir." When all chain has been hove in except just enough to reach the bottom. The chain is vertical.

4. "Anchor is aweigh, sir." When the anchor is broken out and leaves the bottom.

5. "Anchor is in sight, sir." As soon as stock can be seen.

6. "Clear anchor" (or "foul anchor") as soon as he can determine its state.

7. "Anchor is up, sir."

Q. State what preparations are usually made for anchoring.

A. Get anchors ready for letting go, quarter and lower booms ready for going out. See that guys are manned. Take off all boat covers and stow them below. Hook on power boats, ready for hoisting out when anchor is let go. Rig out accommodation ladders and get them ready for lowering. Inspect the ship to see that nothing is hanging over the side, or in the air ports. See that all gear and signal halliards not in use are hauled taut. See that crew shift into clean uniform of the day. Have side boys detailed and side cleaners ready to go over the side.

Q. Describe in detail mooring and unmooring ship (the ship to which you are attached).

Q. Coaling ship. Rig ship for coaling. What are your duties during coaling and after coaling?

Q. In case the coaling winches are not provided with safety clutches, what precaution would you take against the danger from riding turns?

A. See that there is a sharp ax or hatchet near each coaling drum in use.

Q. Rig a collision mat.

"B-4."

Ordnance and Gunnery.

The following books will be useful in preparation for examination in this subject:

The Landing Force and Small Arms Instructions.
Ship and Gun Drills.

"B-5."

Signals.

The candidate for promotion must have a thorough knowledge of all systems of signaling used in the service.

See The Deck and Boat Book.

EXAMINATION FOR CHIEF BOATSWAIN'S MATE.

MISCELLANEOUS QUESTIONS.

1. Moor ship, flying moor—45 fathoms on each chain.
2. Ship at anchor, prepare her in all respects for sea.
3. Ship at sea, prepare her for port.
4. Get ship ready for inspection, beginning at 8 a. m.
5. Make out coaling bill.
6. Get over collision mat.
7. Prepare to be taken in tow by another battleship. Cast off the tow line.

The following is from a battleship's order book:

Arrange signals between towing vessel and vessel to be towed. The chief quartermaster will provide one large megaphone, and will detail one signalman to report to the senior officer on the forecastle with semaphore flags.

PREPARATIONS.—First division: get up from hold one 3½-inch heart-shaped shackle; three 2¾-inch connecting shackles; one set of shackling tools; two 5-inch manila hook ropes; dip rope; two grapnels. Secure the starboard anchor with the housing chain stoppers and controllers, then unshackle bower chain at the 5-fathom shackle and put heart shackle on chain.

Second Division: Get up from cable stores one 6-inch manila hawser for running line and fake down on port side of forecastle. Secure the port anchor with the housing chain stoppers and controllers.

OPERATIONS.—The 3-inch manila trailing line from the towing vessel is either passed aboard from boat or buoyed down and picked up with grapnel. It is led through towing chocks on the side predetermined (in this case on the starboard side). The third, fourth, fifth, sixth and seventh divisions, and men of the first and second divisions not otherwise employed will man the 3-inch manila trailing line and run in the 3-inch and 6-inch manila running lines. The winch may be used, if advisable, but it is better to manhandle these lines.

When the end of the 6-inch steel wire towline comes aboard, it is shackled to the heart shackle on the bower chain. The

6-inch manila line is then unbent. The towing vessel's life buoy, 3-inch manila trailing line and 6-inch manila running line are made up and stowed away, ready to be bent to the 6-inch steel wire towing line when casting off.

If it is intended to use a bridle in being towed, the end of the other (in this case the port) bower chain is taken through the chock and hauled around by means of the dip rope to the other side where it is shackled to the heart shackle. Chain is then veered to the desired interval.

SPECIAL STATIONS.—Shackling and unshackling; chief boatswain's mate of the forecastle, deck blacksmith, petty officer and 4 men from 1st division.

Tending hook ropes; one petty officer and 4 men each from the first and second divisions.

Putting on dip ropes; one petty officer and 8 men from the second division.

At winches; electricians.

At anchor engine and windlass; regular detail, carpenter's gang.

TO CAST OFF TOWLINE.—Heave in on one chain until heart shackle arrives just forward of bitt. Bend the towing vessel's 6-inch manila towing line to 6-inch steel wire towing line by serving along for 4 fathoms. Take to winch, heave in, taking strain off. Unshackle towline and ease away by the 6-inch manila running line, the towing vessel's 3-inch manila trailing line, with cork buoy attached being bent to the other end of the 6-inch manila running line. The bower chains are then shackled up to anchors, the chain around the bow being eased away.

8. Prepare to take another vessel in tow.

The following is taken from a battleship's order book:

Arrange signals as before.

PREPARATIONS.—Fifth Division: Get up from hold and take aft to main deck one 3½-inch heart-shaped shackle; three 2¾-inch connecting shackles; two 5-inch manila hook ropes; one set of shackling tools. Get up from cable stores and place around barbette of after turret one 7-inch towing bridle.

Fourth Division.—Get up from cable stores one 6-inch manila hawser for running line and fake it down on the starboard side of the main deck, aft, both ends pointed aft. Get up from the hold and take aft to main deck one coil of 3-inch manila line. Get from cleaning gear locker and take aft to main deck two heaving lines, rope yarns and chafing gear. Get from life preserver lockers and take aft to main deck two ring life preservers.

Third Division: Take from reel on port side, main deck, the 6-inch steel wire towline (150 fathoms) and fake it down on main deck. Get from hold and take aft to main deck three selvagee straps for easing out steel wire towline.

OPERATIONS.—The fifth division will pass the 7-inch steel wire bridle around barbette of after turret. Put 2¾-inch shackle in each end and connect to heart shackle, and shackle the inboard end of the 6-inch steel wire towline to the heart shackle at the apex of the towing bridle.

The fourth division will secure one end of the 6-inch manila running line to the outboard end of the 6-inch wire towline, seizing it securely along wire line for a distance of about 4 fathoms, leaving the thimble on one end of the wire free for shackling up to the anchor chain of the vessel to be towed.

The 6-inch manila hawser is intended for a running line; to the other end of the 6-inch manila running line will be attached a 3-inch manila line, also two ring life preservers as a trailer. If a boat is used to run lines, take the coil in the boat and pay it out. If no boat is used, cork buoys will be secured to the end of the 3-inch line, and the line trailed across the bow to the vessel to be towed. The exigencies of the case will govern this procedure. If a boat is used, the designated boat will be manned by its regular crew and such other special details as may be necessary.

The third division will ease away the bights of the steel wire towline, using hook ropes and selvagee straps; using the bitts on the port side. The hook ropes should be fleeted before arriving at the stern chocks.

SPECIAL STATIONS.—Shackling and unshackling; chief boatswain's mate of the quarter-deck, deck blacksmith, one petty officer and four men from the fifth division.

Tending hook ropes, putting on selvagee strap, etc.; two petty officers and 8 men from the third division, one-half at each hook rope.

At winches; electricians.

9. Pick up a lost anchor that has been buoyed.
10. Carry out a line in a boat.
11. State all the precautions to be taken in painting ship.
12. Station and instruct all lookouts and sea details.
13. Ship in dry dock; take general charge of cleaning and painting hull.
14. Clear ship for action; where place various articles?
15. Describe all general and emergency drills.
16. Take charge of and drill a section of infantry at close and extended order.

17. Same, section of artillery.

18. How do you rig a collision mat?

A. The following is taken from a battleship's order book:

There are two collision mats, 12 by 12 feet. They are stowed on the barbettes of turrets 1 and 4.

Both mats shall be prepared for immediate use and the "hogging and distance" and "reeving lines" actually placed, when the signal for collision quarters is sounded; it is possible to use both mats at the same locality.

The mat will be rigged diagonally. The HOGGING AND DISTANCE LINES are made fast to the upper and lower cringles of the mat, and are faked down and made up in the mat. These lines are 35 fathoms long. One-third the length is of ⅜-inch galvanized wrought iron chain and the remainder 1½-inch steel wire rope. The chain part is marked in feet from the center of the mat; the first mark is at 10 feet. Cringles are fitted in the forward and after corners of the mat to which the FORWARD GUY and the AFTER GUY are bent.

A REEVING LINE of 10 fathoms of ½-inch chain tailed at each end with 20 fathoms of 1½-inch steel wire rope, for each mat will be kept in the collision gear chest on the forecastle, and the key of this chest shall be kept by the officer of the deck at all times. In this chest will be kept four heaving lines, two for each reeving line, to be used in fleeting the reeving lines aft. Two small jiggers, for use in hauling on the hogging and distance lines, will also be kept in the collision chest. They shall be used for none other than the designated purpose.

The bight of the reeving line is passed under the bow and the ends are fleeted by the heaving lines to the scene of the collision. One end of the reeving line is then bent to the end of the inboard hogging and distance line, which, when the mat is over the side, is on the lower corner of the mat; the other end of the reeving line is the hauling part. It will be manned by enough men to warrant rapid and efficient work.

The heaving lines, one on the starboard and one on the port side, will be led forward outside, clear of everything, and bent to the eyes of the reeving lines, by men specially detailed. They will be used to fleet the reeving lines aft.

The mat is rushed to the location of the collision and laid on deck. The cover is taken off, the mat unrolled, thrums up, with corners to which the forward and after guys are made fast, fore and aft, and the corners to which the hogging and distance lines are made fast, port and starboard. In this position the inboard corner will be the lower end when the mat is over the side.

The upper hogging and distance line, which is made fast to the overboard cringle, will be led out clear and secured taut inboard, ready for easing away to lower the mat. Petty officers shall be detailed for that duty.

The lower hogging and distance line is bent to the reeving line hauled under the ship, and becomes the hauling part on the side opposite the collision, where it is belayed.

Two guys will be stowed on reels on the main deck, one forward guy and one after guy on each reel.

These guys are of 4-inch manila. They are 50 fathoms in length. They will be led over the side, well clear of everything, and manned by sufficient men to warrant rapid and efficient handling. These lines are bent to the cringles on the forward and after corners of the mat, and belayed on deck.

The center of the mat must be placed over the center of the injury, and allowance has been made in the marking of the chain for the distance from the center of the mat to the top of the cringle.

The senior carpenter gives the location of the injury by frame number and distance below the water line.

CHIEF GUNNERS' MATES.

In addition to the SPECIAL SUBJECTS FOR ALL CHIEF PETTY OFFICERS, chief gunners' mates must have a thorough knowledge of the following subjects:

"G-1."

The Duties of the Gunner, as Given in the Navy Regulations.

R. 3211. (1) The chief gunner, or gunner assigned to ordnance duty, shall act as an assistant to the gunnery officer.

(2) In the absence of the chief gunner or gunner assigned to ordnance duty, his duties shall be performed by the chief gunner's mate.

R. 3212. (1) The chief gunner, or gunner, assigned to electrical duty shall act as an assistant to the gunnery officer, and shall perform similar duties in connection with the electrical outfit outside the dynamo rooms as are prescribed for the ordnance gunner in relation to the ordnance outfit so far as they apply.

(2) Under conditions to be prescribed by the commanding officer he shall render such assistance to the engineer officer of the ship as may be necessary in connection with the oper-

ation, care and maintenance of such parts of the electrical
fit as lie within the dynamo rooms.

(3) In the absence of the chief gunner or gunner assig
to electrical duty, his duties shall be performed by the c
electricians, each in his own branch.

I. 2311. (1) The chief gunner or gunner assigned to
nance duty shall perform the same duties in relation to
nance stores and spare articles as are assigned to the b
swain in relation to the boatswain's stores; also, such c
duties as may be assigned him.

(2) He shall comply with the ordnance instructions a
the care, preservation and use of ordnance material; he
report to the gunnery officer any repairs to the armamen
other work in his department that he deems necessary; he
supervise such ordnance work as the gunnery officer may
rect.

(3) When at sea, he shall attend to the security of the
tery, and he shall endeavor at all times to prevent injur
any part of the armament.

(4) He shall be accountable to the gunnery officer for
condition of the armament and for the ordnance equipm
and stores in use. For purposes of inspection and as dire
by the commanding officer he shall have access to such
nance equipment and stores as are not yet issued for us
the general storekeeper of the ship.

(5) He shall not draw ordnance stores from the gen
storekeeper of the ship, nor issue them for use, without
thority from the gunnery officer.

(6) He shall collect data for ordnance returns, and
perform such clerical work as the gunnery officer may req
in connection with his department.

(7) He shall be responsible for the efficient condition
the life buoys, frequently testing them to insure their g
condition, and he shall keep them ready for use at all ti

I. 2312. At quarters and when all hands are called, the
tions of the chief gunners, or gunners, shall be as the c
manding officer may direct.

I. 2316. (1) The gunner assigned to electrical duty
perform the same duties in relation to electrical stores
spare articles as are assigned to the boatswain in relatio
the boatswain's stores, and such other duties as may be
signed him.

(2) He shall comply with instructions for the care, pre
vation, use and record of electrical material, plants and a
ances; he shall report to the gunnery officer any repairs to
electrical plant or other work in his department that he de

cessary; and shall supervise such electrical work as directed the gunnery officer.

(3) He shall be accountable to the gunnery officer for the ndition of the electrical plant and for the electrical equipnt and stores in use. For inspection and other purposes, as rected by the commanding officer, he shall have access to ch electrical equipment and stores as are not yet issued for e by the general storekeeper of the ship.

(4) He shall not draw electrical stores from the general rekeeper of the ship nor issue them for use without auority from the gunnery officer.

(5) He shall collect data for electrical returns and perform ch clerical work as the gunnery officer may require in conction with his department.

(6) He shall maintain all electric circuits in good condition, ee from grounds, and conduct daily ground tests on them.

APPOINTMENT AS GUNNER.

R. 3314. A candidate for appointment as gunner must be der 35 years of age. He must have served at least one year a chief gunner's mate, chief turret captain, or chief electrian, or as a gunner's mate, turret captain, or electrician, first ass; and must be serving as such, under continuous service at e time of examination. The average of his marks, taken om all service records (exclusive of first year of service) ust be not less than 85 per cent, and there must be on file in e Bureau of Navigation letters of recommendation from mmanding, executive and gunnery officers with whom he s served. A candidate for gunner to specialize in ordnance ust have served not less than 7 years on board of cruising ssels of the Navy. A candidate for gunner to specialize in ectricity must have had 5 years of such service. Special conderation may be given in cases of electricians (radio) who ve been detailed on shore duty involuntarily.

(2) He must be able to read and write with facility; must derstand the first four rules of arithmetic and proportion; ust be able to keep accounts correctly of ordnance and elecical stores; must be familiar with the Rules of the Road; and ust be thoroughly conversant with all drills and regulations the Navy pertaining to the duties of a gunner.

(3) He must understand the construction, mode of disounting and assembling, and the methods of remedying fficulties and defects in B. L. rifles, R. F. and machine guns service types, and the magazine rifles and other small arms the Naval service; the construction, adjustment, care and

preservation of mines and torpedoes; and the use of such too as are supplied for repairing ordnance at sea.

(4) A candidate for appointment as gunner for ordnanc must be able to put up all kinds of ammunition, to take in pressions of vent and bore, to star gauge guns, to adjust, verif and use sights, to fit all gun gear, and thoroughly understan and be able to explain all fuses in use in the Navy.

(5) He shall understand the manner of fitting magazine shell rooms, shell houses and light rooms; the manner o stowing and preserving powder, projectiles, fireworks, and a ordnance stores afloat and on shore and the manner of handlin and securing guns.

(6) He must be fully conversant with all orders and regula tions in regard to the care and handling of ordnance materia and stores afloat and on shore, and with the charges of powde for guns and projectiles of every caliber.

(7) A candidate for appointment as gunner to specialize i electricity must be a competent electrician. He must be full conversant with the designing, construction, assembling an disassembling, care, management, repair, and preservation o all electrical apparatus, of whatever character, installed o board ship. He must be familiar with the use of all tools fo repairing electrical machinery; with the construction, care an repair of dynamo engines, oil and gasoline engines, all types o motors, measuring and testing instruments, radio apparatus and all types of batteries, and familiar with the interior com munication systems on board ship, as well as the power an lighting systems, and with electrically operated ordnance mate rial. He must be able to read sketches and make working drawings of machinery.

ALL CHIEF GUNNERS' MATES MUST BE THOROUGHLY FAMILIAR WITH THAT PART OF THE NAVAL INSTRUCTIONS THAT COVERS THE SUBJECT OF ORDNANCE. ALL THIS INFORMATION IS TO BE FOUND IN CHAPTER 26 OF THE NAVAL INSTRUCTIONS.

"G-2."

All the subjects given in the Manual for the rating of gunner's mate.

See Part III of the Manual.

"G-3."

Torpedoes and Mines.

This subject is covered thoroughly in the pamphlets issued by the Bureau of Ordnance.

"G-4."

Detailed knowledge of the methods of conducting Small Arms practice, together with all the instructions in regard to the range.

See "The Landing Force and Small Arms Instructions," and "The U. S. Marine Corps Score Book, and Rifleman's Instructor."

CHIEF TURRET CAPTAINS.

In addition to the SPECIAL SUBJECTS FOR ALL CHIEF PETTY OFFICERS, chief turret captains must show a thorough knowledge of the subjects given in Part III for the rating of turret captain, first class. Acting appointments as chief turret captain will be given to turret captains, first class, only when the candidates have passed a satisfactory examination of the same character as for turret captain, first class, but of a more advanced nature.

CHIEF QUARTERMASTERS.

In adition to the SPECIAL SUBJECTS FOR ALL CHIEF PETTY OFFICERS, chief quartermasters must have a thorough knowledge of the following subjects:

"Q-1."

A sufficient knowledge of the general and routine duties of the navigating officer to enable the quartermaster to be a good assistant to that officer.

1. The navigating officer is the officer detailed by the Navy Department to perform the navigation duties. He is the head of the navigation department of the ship.

2. GENERAL DUTIES. He is responsible for the care and good order of the steering gear in general, and of the compartments occupied by the steering machinery (except the steam steering engine), the interior of the conning tower, the chart house, navigator's office and storerooms, and all instruments, aids, or apparatus directly or indirectly connected with the navigation of the ship.

3. Previous to entering pilot waters, the navigating officer studies the charts, sailing directions and other sources of information concerning the navigation of the ship therein.

4. The navigating officer keeps all sailing directions, light and beacon lists of the ship corrected to date. He shall see that the sources of this information are charged against the

charts in the proper blank spaces in the chart catalogue. He sees that all charts are corrected to date before they are used. The Hydrographic Office, Washington, sends out weekly notices of such corrections.

5. He reports in writing the position of the ship at 8 a. m. at noon, and at 8 p. m.

6. He prepares the compass reports and keeps the compass record which is a complete history of the compasses while on board ship. Weather permitting, he ascertains the error of the standard compass every day. He prepares and keeps corrected tables of deviations of the standard, battle, maneuvering and auxiliary battle compasses. Neither the standard compass nor any of its attachments, compensating magnets, nor appurtenances shall be moved from the position in which they were placed and secured when the ship was commissioned, unless the captain so directs.

7. He shall wind the chronometers daily and carry out such instructions as may be given from time to time concerning their care, comparison and rating. He has care of the deck clock, and he regulates the ship's time.

8. He must frequently examine the lead lines and other sounding gear, and all apparatus used for determining the speed of the ship, and see that they are in order, and correctly and properly marked.

9. He has charge of the preparation and care of the log, and, except on the flagship, of the signal record book.

10. He is responsible for the library books issued by the general storekeeper of the ship for use.

Questions of the following nature are suggested. The candidate will learn many of these answers from his practical experience in the performance of routine duties, and much valuable information may be found in the introductory pages of Bowditch's "Practical Navigator":

1. What is meant by the Compass Error?
2. What is deviation; variation?
3. What are the various corrections to be applied to the gyroscopic compass?
4. How are charts stowed?
5. How numbered?
6. What charts are issued to the service?
7. How do you wind a chronometer?
8. What are "Sailing Directions"?
9. What is the "Nicholson Log"?

A. The ordinary form of patent log records distance, but not speed. It is possible to find the average speed for any given interval of time from the distance recorded during that

interval. But the ordinary form of patent log does not give the actual speed at any instant. The Nicholson Log gives both the distance run and the speed at any instant; it also shows a continuous graphical record of speed. The following is the principle of the Nicholson Log: A vertical tube passes through the bottom of the ship and projects several inches below. The lower end of the tube is closed, but the water enters freely through an opening in the forward side and rises—when the ship is at rest—to a level corresponding with the height of the water outside; that is, with the waterline of the ship at that time. As the ship moves ahead, the pressure due to the "head" of water outside is increased by the pressure due to the speed of the ship; consequently, the column of water rises in the tube to a height that varies with the speed and which, accordingly, may serve to measure the speed. Inside the tube there is a float attached to a chain that passes over a sprocket-wheel connected by means of suitable gearing with a pointer that indicates the speed as the float rises and falls with the water in the tube. A counter-weight at the other end of the chain balances the float.

It is evident that the adjustment of the instrument will vary with the draft of the ship and that some compensating mechanism is needed to meet these variations. For this purpose a second pipe is fitted which opens through the bottom of the ship but does not extend below it. In this "equalizer pipe," as it is called, the height of the water is unaffected by the speed and the column stands always level with the water outside. In this tube is a float which remains always at the same point so long as the draft is constant, but rises or falls as the draft changes. This float, like that in the speed pipe, is connected through a chain and sprocket wheel with the recording mechanism to which it is geared in such a way as to compensate automatically for changes in draft.

The speed of the ship is indicated continuously on the speed dial, and the distance run is added up by a counter, so that a glance at the indicator shows at once both the instantaneous speed and the distance made good *through the water*. Moreover, the speed is recorded graphically on a record sheet which is carried on a drum revolving by clockwork.

The following text and plates are reproduced through the courtesy of the manufacturers, The Nicholson Ship Log Company of Cleveland, Ohio.

Plate 2 shows a cross section of a vessel with the log installed in the pilot house, the pipes running directly thereto. The 4-inch pipe Q is known as the speed pipe; X as the load level pipe. It is necessary for the latter to extend only a short

DETAILS OF SEACOCKS AND CONNECTIONS.

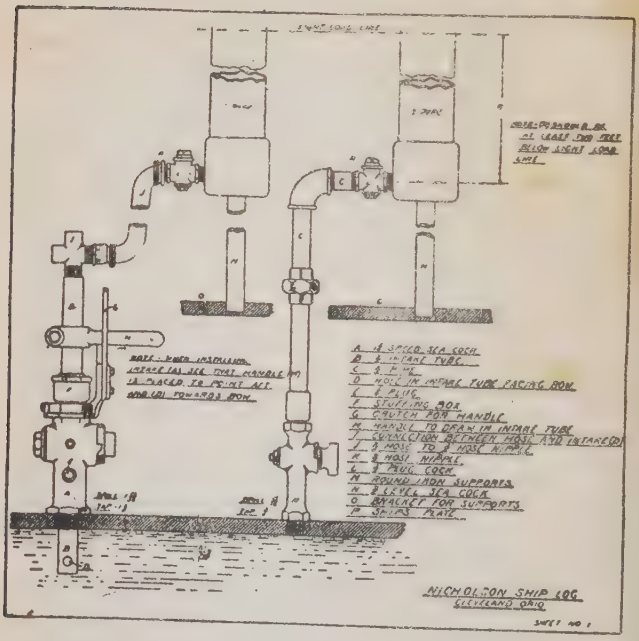
A. 4" SLUICE SEA COCK
B. 4" INTAKE TUBE
C. 3" PIPE
D. HOLE IN INTAKE TUBE FACING IRON
E. 3" PLUG
F. STUFFING BOX
G. CLUTCH FOR HANDLE
H. HANDLE TO DRAW IN INTAKE TUBE
I. CONNECTION BETWEEN HOSE AND INTAKE(D)
J. 3" HOSE TO 3" HOSE NIPPLE
K. 3" HOSE NIPPLE
L. 3" PLUG COCK
M. ROUND IRON SUPPORTS
N. 3" LEVEL SEA COCK
O. BRACKET FOR SUPPORTS
P. JOINS PLATE
NICHOLSON SHIP LOG
CLEVELAND OHIO

Plate 1.

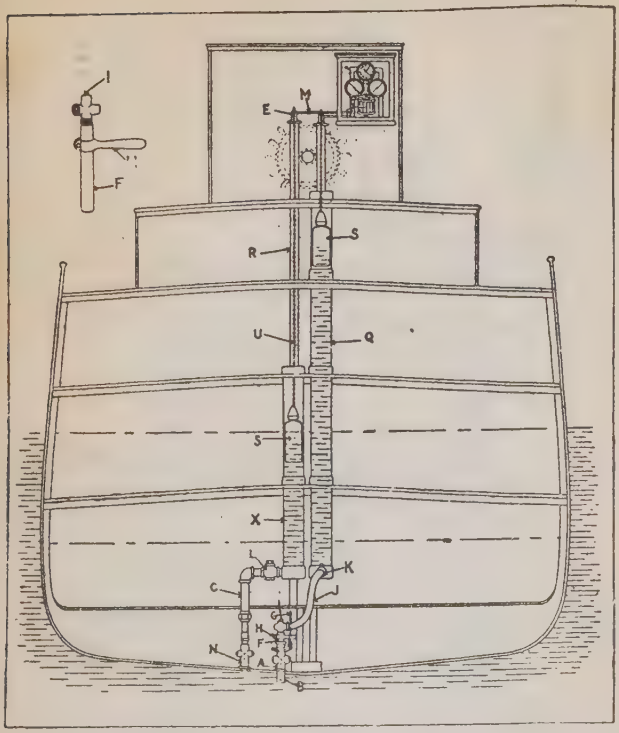

Plate 2.

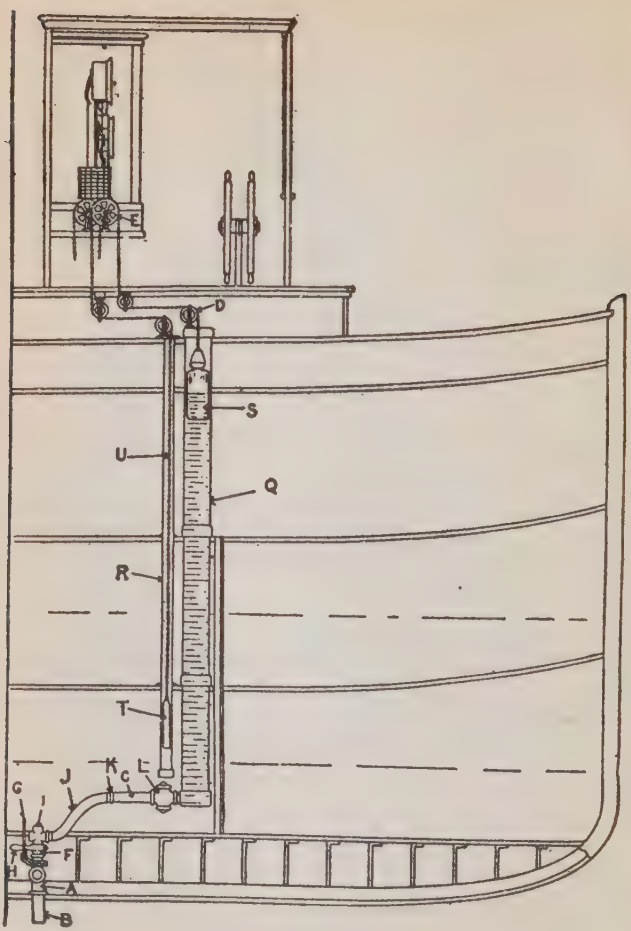

Plate 3.

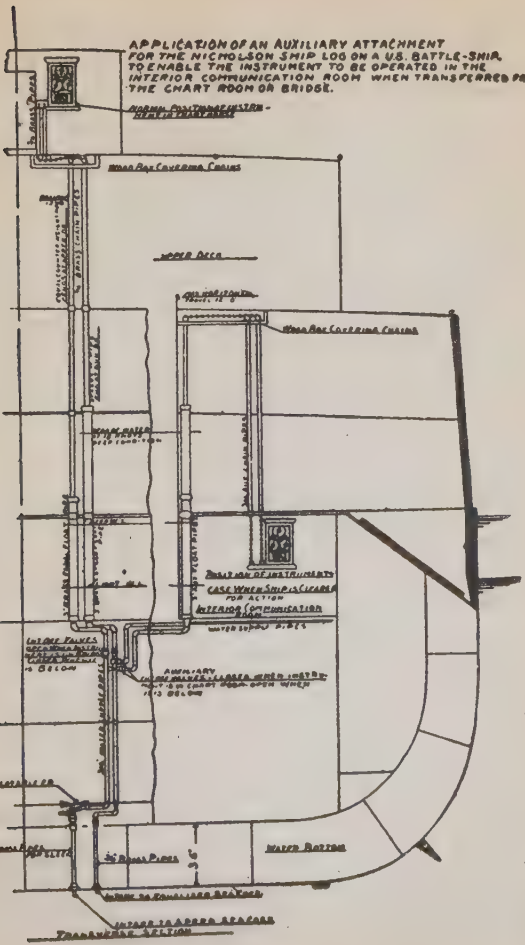
APPLICATION OF AN AUXILIARY ATTACHMENT
FOR THE NICHOLSON SHIP LOG ON A U.S. BATTLE-SHIP,
TO ENABLE THE INSTRUMENT TO BE OPERATED IN THE
INTERIOR COMMUNICATION ROOM WHEN TRANSFERRED FROM
THE CHART ROOM OR BRIDGE.
UPPER DECK
WATER BOTTOM

PLATE 4.

distance above the deepest load line and the same amount below the lightest load line; the small pipe shown being a protection to the driving chain R. The speed pipe starts at the same level as the pipe X and extends as much higher above the deep load line as the maximum speed of the ship requires.

To the float shown in the 4-inch pipe is attached a chain which runs over the sprocket wheels E in the pilot house. To the end of this chain is attached a counterweight, T, as shown in Plate 3. This weight is encased in a ¾-inch iron pipe.

The recorder operates in the following manner: When the ship is at rest, both floats will remain at the water line, always keeping the registering apparatus at zero, regardless of any change in load. As the ship moves forward the water enters the intake tube at the hole B and flows into the speed pipe, raising the water column according to the rate of speed. When the ship has reached her normal speed, the float S comes to rest and does not change unless the speed is increased or diminished. When the ship stops the float will descend to the load line. The instrument does not register when the vessel goes astern.

Connecting the recorder with the sprocket wheels E are the ¼-inch brass shafts M. In the entire construction of the instrument there is no metal used that will interfere with the action of the compass.

10. What are the directions for operating the Nicholson Log?

A. (a) Keep the case locked and allow no unauthorized person to meddle with it.

(b) Wind both springs of the clock every 24 hours. Change record card and ink pen at same time.

(c) Do not attempt to set back the counter nor alter the speed hand.

(d) In setting the paper record card on the recording drum, make sure the paper is fitted tightly to the bottom; let any shortage come at the top.

(e) To set the pen, rotate the drum to the proper hour; the drum moves on a friction bearing and can be moved either way without deranging the clock.

(f) Use only the best clock oil for the instrument and use that very sparingly as too much oil will gum the parts. Be careful not to get any oil on the friction wheel or cone. Use light machine oil for chain, sprockets and pulleys. Keep a lump of camphor in the case. This will keep the metal bright and counteract the effect of damp or salt air.

(g) Keep the ¾-inch regulating cock in the sea-line connection half closed to prevent the instrument from vibrating in a sea-way. Leave the ¾-inch regulating cock in the speed line wide open.

(h) It is well to pour a half-pint of kerosene oil in each float pipe to preserve the pipe and act as a lubricant for the float.

(i) When the ship goes out of commission, close both sea-cocks; this will allow the water to drain from the pipes to the bilge and prevent possible freezing.

(j) If occasion should ever arise for overhauling floats, counter-weights or chains, the sprocket wheels at the side of the instrument case should be lashed to prevent their turning, with possible resulting damage to the instrument.

11. Describe the SUBMARINE SOUND SIGNAL apparatus.

* A. This is a system for transmitting sound signals through the water and receiving them by special instruments on board ship. Briefly, the system is as follows: A bell, immersed as far as is convenient below water, is so placed as to mark a danger or a point of importance in piloting. This bell is automatically sounded at intervals with a characteristic signal which fixes its identity. The sound of the bell is transmitted through the water, and experiments show that it can be heard without instruments at a distance of several miles by a listener whose ear is held against the inner skin of a ship, below the water line. With the special apparatus for receiving the sound and transmitting it to the ear, the range of audibility is from 4 to 10 miles, depending upon conditions; that is, upon the speed of the ship and the bearing of the bell. High speed is to some extent unfavorable, doubtless because the wash of the water along the side interferes with the sound. The bearing of the bell with reference to the ship's head determines the angle at which the sound waves strike the receiver. The result is that a signal on the beam can be heard much farther than one that is forward of or abaft the beam.

If the submarine signal did nothing more than to announce with certainty the proximity of the danger which it marks, it would be a very valuable aid to navigation. But it does much more than this. It fixes the direction of the danger within narrow limits.

The RECEIVING APPARATUS consists of a small iron tank attached to the side of the ship, wholly on the inside, and filled with salt water. In this tank is a delicate receiver which takes

* Reproduced from Knight's "Modern Seamanship," by courtesy of the publishers, The D. Van Nostrand Company, of New York.

up the sounds as they come to it through the water and transmits them through an electric circuit to a telephone in the pilot house or on the bridge. A switch admits of throwing in either the starboard or the port receiver. If you desire to listen to both sides, you may throw in the receivers alternately by a movement of the switch. If you hear the sound more clearly in the starboard than in the port receiver, you will know that the signal lies to starboard. If you hear the sound with the same clearness in each receiver, the signal is directly ahead (or astern). If, as the ship swings, the sound grows fainter in one transmitter and clearer in the other, the signal is drawing toward that beam from which it is heard more clearly. When the sound has reached its maximum intensity, the signal is approximately abeam.

A signal which is decidedly on one side of the ship will hardly ever be heard through the opposite receiver; but when it is only a little on one bow, it can usually be heard in the receiver on the opposite bow. Thus, as has been explained, a signal which is nearly ahead and not very far distant may be heard through both receivers.

If the signal is more distant, the sound will be lost, even in the near receiver, as the ship's head swings up to it, and will not be picked up on the other side until it is a point or more on the bow. In this case, the bearing may be taken as approximately midway between the heading on which it is lost and that on which it is again picked up.

If the signal is picked up through the starboard receiver, the bell lies to starboard, and it is, in all probability, forward of the beam. The sound will probably grow clearer until the bell is abeam, and then fainter as it draws abaft the beam.

While it is not claimed that the signal can be heard beyond about 5 miles, there are many cases on record when they have been heard at two and three times this distance.

It is evident that the receivers can pick up other sounds as well as the signals from the bell. For example, the receiver may give notice of the proximity of another ship whose propellers are turning over.

12. Describe the important features of the latest type of the KELVIN (THOMPSON) SOUNDING MACHINE.

The machine should be fixed on the spar deck in the vicinity of the fore bridge so that the working of the machine is under the general supervision of the officers on the bridge.

The wire is kept clear of the ship's side by a spar, which should be from 30 to 40 feet long according to the size of the ship.

The spar should not be over 5½ inches in diameter; it should taper slightly to both ends.

The heel is fitted with a gooseneck and clamp to an awning stanchion, or with a swivel bolt to the ship's rail. For convenience in shipping and unshipping, the heel must admit of its being guyed forward or aft, and also of its being topped up or lowered down.

The other end of the spar should be fitted with a band and three lugs. A topping lift, to support the spar in a horizontal position, is secured to the lug at the upper part of the band, and a fore guy and an after guy secure to lugs on the fore side and after side of the band. When in use, the spar is held in a horizontal position at right angles to the fore and aft line of the ship by the topping lift and guys.

A small sheave is fixed in a mortise at the outer end of the spar just within the band previously mentioned. A line is rove through the sheave hole to serve as an outhaul for hauling the carrier or traveler out on the spar. One end is secured to the brackets of the carrier, and the other end is brought inboard to a cleat near the heel of the spar. The sounding wire itself serves as an inhaul; but if a separate inhaul is desired, the other end of the outhaul will serve.

If possible the heel of the spar should be secured at such a height above the deck as to be 3 or 4 inches above the top of the wire drum of the machine.

The position of the machine should admit of the men having good footing; it should be in view of the bridge. It need not necessarily be out close to the side of the ship. The machine should be placed so that the spindle of the wire drum is at right angles to the longitudinal axis of the spar. Even if the heel of the spar cannot be secured above the level of the top of the wire drum, a very slight movement of the machine to either side will ensure that the wire leads clear to the block on the carrier.

Before the deck plates of the machine are finally screwed down, care must be used to see that the wire will run out without chafing against the side of the spar, or any fittings, or the sides of own drum. The wire must run out as nearly as possible parallel to the spar.

To Ship the Spar.—Place the carrier over the heel end of the spar; and with the spar in a fore-and-aft position, secure the gooseneck into its socket. Then by tending the topping lift and guy ropes, it is easily swung out into position for use.

The topping lift should reeve through a block secured aloft, so that the topping lift will make a large angle with the spar.

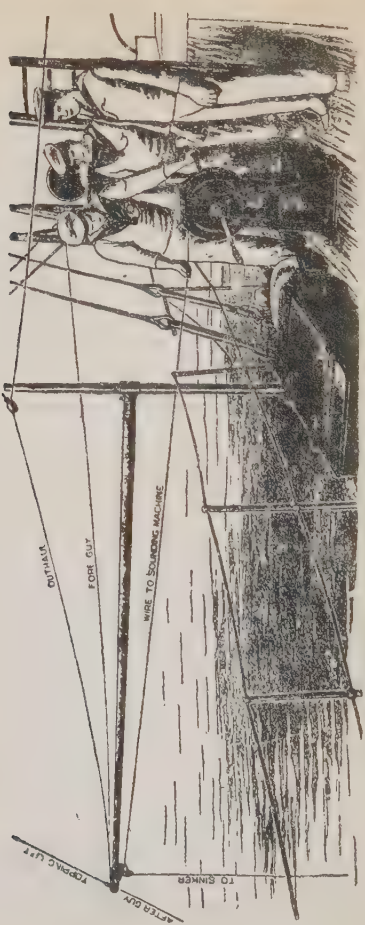

Plate 5.

SOUNDING FROM THE FORE BRIDGE—WIRE RUNNING OUT.

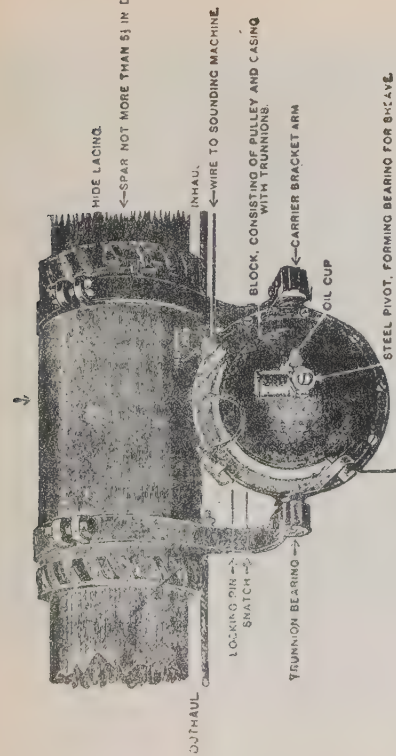

Plate 6.

LARGE VIEW OF CARRIER AND BLOCK.

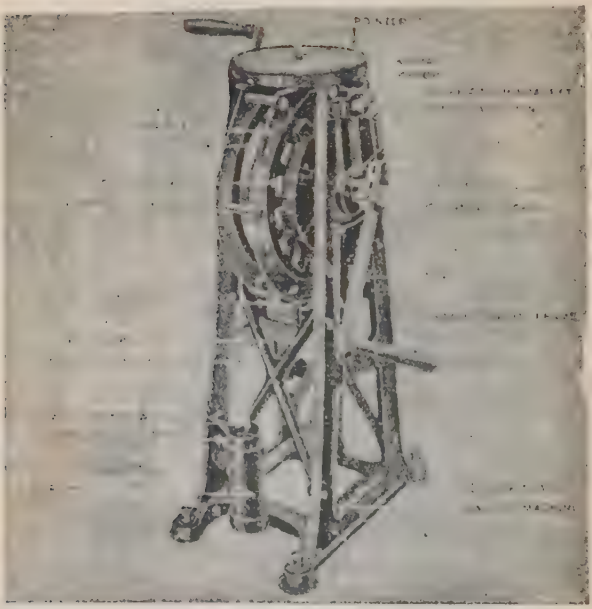

Plate 7.
LORD KELVIN'S NEW SOUNDING MACHINE.
Mark IV.—Hand Driven.

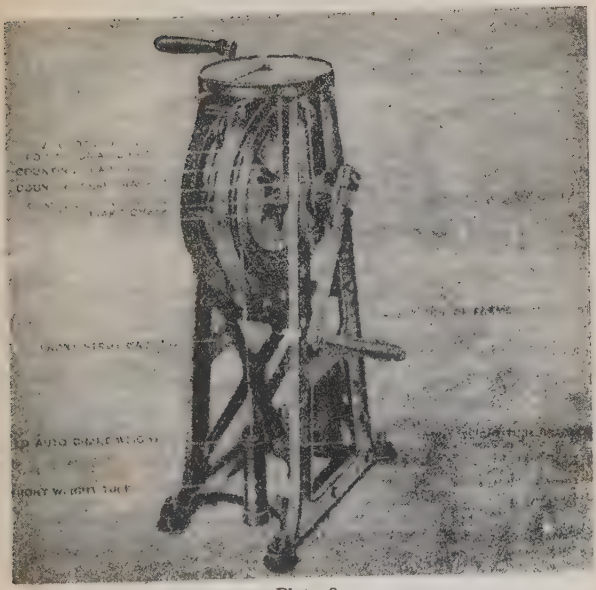

Plate 8.
LORD KELVIN'S NEW SOUNDING MACHINE.
Mark IV.—Hand Driven.

POSITION OF BRASS GUARD TUBE.—The stray line between the sinker and the wire should not be less than 9 feet long. The brass guard tube should be seized on it, 3 feet above the shank of the sinker.

SWIVEL BETWEEN WIRE AND STRAY LINE.—The connection between the hemp and the wire should be a swivel, to prevent turns passing into the wire when the lead is struck by the top of a wave and set spinning, as sometimes happens.

AUTOMATIC BRAKE.—An important feature of the new machine is the "Automatic Brake," consisting of a cord passing over a "V" shaped groove on the side of the drum. The cord is attached to weights working in tubes; it is adjusted as follows: Attach the cord to the heavy weight (6 pounds); pass it over the groove and secure it to the 1-pound weight; so that, when the heavy weight is resting on the bottom of the tube at the back of the machine, the 1-pound weight hangs about 1 to 1½ inches from the bottom of the tube at the front of the machine. The cord may be wet or dry without making any difference in the working of the brake; it may be kept oiled with advantage to prevent its rotting. In renewing this cord, care must be taken to use the same quality and diameter as the original. The groove also should be kept free from rust or dirt. A 6-pound weight will answer up to speeds of 13 knots. If, at higher speeds, it shows a tendency to jump out of its tube, the 10-pound weight should be substituted. Four 1-pound weights are supplied, to be added to the 6-pound weight if found necessary. Once adjusted, the automatic brake requires no attention. The automatic brake prevents the wire drum from over-running, and ensures that the resistance against the wire, when running out, is always constant for all speeds of the ship. This causes the length of wire run out for the same speed of the ship to be the same for the same depth, provided that the following points are attended to:

(a) That when releasing the main brake at the order "let go," it is given one complete turn in the contrary direction to "heaving in" on the handles; this must be done smartly.

(b) That sinkers of the same shape and of exactly the same weight are always used.

(c) That the same length and size of stray line is always used, that the swivels are identical, and that the guard tube is seized on in the same place.

(d) That the same brake weight is in use; because at a given speed a 10-pound weight would not permit the wire to run with as much velocity as the 6-pound weight.

This property of constant resistance against the wire running out for all speeds is a most valuable feature. When soundings are being taken continuously, and the ship is steaming at a constant speed, a change of depth is at once indicated by a less or greater amount of wire run out.

When in pilotage water, entering or leaving harbor, at speeds which render it difficult or impossible to get bottom with the hand lead and line, the machine should be kept constantly going, as a check on the hand lead, and for information as to a change of depth. Steaming in 20 fathoms of water at a speed of 10 knots, soundings can easily be obtained continuously once a minute, and in 10 fathoms once every half minute.

It is important that the number of fathoms of wire run out should be noted at the instant the wire slacks, and not after the brake has been applied, as a few fathoms of wire may run out during the operation of applying the brake.

CARE OF SOUNDING MACHINE.—The machine must be kept clean and well oiled. When the machine is not in use, the main brake must never be left set up. The "V" groove of the automatic brake must be kept clean and free from clogged oil, dirt or dust, and no cutting substances such as bath brick or emery must ever be used in cleaning it. The brake weights and their tubes must be kept clean; the tubes should be wiped out before sounding, and the weights oiled slightly to ensure that they move easily in the tubes. The brake cord should be frequently examined for signs of wear and changed if necessary.

CARE OF SOUNDING WIRE.—When sounding and heaving in the wire, it must be carefully guided on the drum, using a piece of oiled canvas to protect the hand. A reel and fittings for attaching it to the machine are supplied so that the wire can be conveniently wound off for occasional examination or oiling. On arrival in port, the wire should be wound off to the spare reel, and then back on to the drum of the machine; during this process, the wire should be oiled over and examined for faults. If kinks occur in the wire, cut the wire at the fault and splice it.

TO SPLICE THE WIRE.—Let the ends of the wire overlap for about 3 feet in the case of strand wire, and 4 feet in the case of piano wire. Lay the parts up slackly and put temporary stops on to keep them from untwisting. Wax some sailmaker's seaming twine, and put a whipping over the twisted parts of wire taking care that the ends of the wire do not project through the whipping. Two men can put on the whippings at once by commencing in the middle and working towards the ends. When each whipping is an inch beyond the end of the

wire, cut its ends off about 2 inches long, lay them along the wire and cover them by another whipping commenced on the single wire or strand just beyond them and worked toward the center and finished close against the ends of the original whippings. Old splices should be examined to see that the ends of the wire have not worked through the whippings. If so, they must be mended, because a projecting end of wire may cause a foul on the drum.

TO TAKE SOUNDINGS.—A petty officer and two men are sufficient, but an extra man is desirable when steaming fast and there is much strain on the wire. The petty officer takes the soundings, two men heave in, and the third guides the wire evenly on to the drum and occasionally relieves one of the men on the handles. The sinker being attached to the wire, ship the handles, put the sinker over the side, and let the wire off gently by turning the handles, snatch the wire in the block of the carrier, run the carrier out by the outhaul and belay it. Let the sinker down until it is almost touching the water, push home the brake catch and set the pointer on the dial to zero. The petty officer now eases the main brake gently until it will just hold the wire from running, and holding the handle of the machine with one hand, presses the feeler pin gently on the wire with the other, and notes the exact position of the handle. To "let go" he rapidly revolves the handle one turn in the direction contrary to "heaving in," and keeps his eye on the pointer while the wire is running out; the instant the wire slacks, he reads off the number of fathoms of wire out and applies the main brake; he then stands clear and lets the other men heave in. The leadsman winds with his left hand, and guides the wire on the drum with a piece of oily waste or canvas in his right hand. The brakesman winding with both hands, watches the counter from time to time during the winding in; and when the swivel or link is 5 fathoms from the fairlead, he calls out "hand the lead." The petty officer instantly leaves the machine and releases the outhaul. The brakesman then winds slowly in until the lead reaches the ship's side. The petty officer then takes the lead on board, examines the arming for specimen of bottom, and prepares the arming for a fresh cast.

WHEN CHEMICAL TUBES ARE USED, one of the brass guard tubes is lashed to the rope between the wire and the sinker about 3 feet from the end of the wire. Before taking a cast, the petty officer in charge places a glass tube with the open end down in the guard tube and puts the cap on. When the guard tube is brought on board, care should be taken to keep it right

side up. If it is turned on its side or upside down, the water will run up in the glass tube and produce a bad mark. The petty officer takes out the glass tube, and applies it to the scale with the closed end against the brass plate at the top of the scale. He reads off the number of fathoms shown on the scale by the lowest part of the red coating.

DIRECTIONS FOR TAKING THE MACHINE TO PIECES are found in a pamphlet issued by Messrs. John Bliss & Co., agents for Kelvin, Bottomley & Baird, Ltd., Glasgow, Scotland. The plates and text in relation to the Mark IV Sounding Machine are here reproduced through the courtesy of Messrs. John Bliss & Co.

"Q-2."

All the subjects given in Part III of the Manual for the rating of quartermaster.

"Q-3."

Signals.

A chief quartermaster's knowledge of this subject must be absolutely thorough. See "Deck and Boat Book," the General and the International Signal Books.

"Q-4."

The Duties of the Officer of the Deck.

A chief quartermaster must have a good general knowledge of these duties. See Navy Regulations, Chapter 24, and Naval Instructions, Chapter 16.

PART FIVE

THE SUBJECTS WHICH MEN OF SPECIAL RATINGS SHOULD KNOW

PART FIVE.

THE SUBJECTS WHICH MEN OF SPECIAL RATINGS SHOULD KNOW.

All Chief Petty Officers and Petty Officers of the Artificer and Special Branches.

Q. What is the ORDER OF PRECEDENCE of chief petty officers and petty officers of the artificer and special branches?

A. As a rule, petty officers of the artificer or special branches will not be assigned to divisions in which there are petty officers of the seaman branch. But if they are so assigned, the petty officer of the seaman branch takes precedence in all matters pertaining to military control, or command, in his part of the ship. The senior petty officer of the artificer or special branch takes precedence in his own department, or in his own part of the ship in accordance with the following table:

Chief Petty Officers.

Artificer Branch.	Special Branch.
Chief machinists' mates.	Chief yeomen.
Chief electricians.	Hospital stewards.
Chief carpenters' mates.	Bandmasters.
Chief water tenders.	Chief commissary stewards.

Petty Officers, First Class.

Artificer Branch.	Special Branch.
Machinists' mates, first class.	First musicians.
Electricians, first class.	Yeomen, first class.
Boilermakers.	Commissary stewards.
Coppersmiths.	Ship's cooks, first class.
Blacksmiths.	Bakers, first class.
Plumbers and fitters.	
Sailmakers' mates.	
Carpenters' mates, first class.	
Water tenders.	
Ship fitters, first class.	
Painters, first class.	

Petty Officers, Second Class.

Artificer Branch.	Special Branch.
Machinists' mates, second class.	Yeomen, second class.
Electricians, second class.	Ship's cooks, second class.
Carpenters' mates, second class.	
Printers.	
Oilers.	
Shipfitters, second class.	
Painters, second class.	

Petty Officers, Third Class.

Artificer Branch.	Special Branch.
Electricians, third class.	Yeomen, third class.
Carpenters' mates, third class.	Hospital apprentices, first class.
Painters, third class.	

All other Men in the Artificer and Special Branches.

Q. What is the order of precedence of enlisted men in the artificer and special branches?

A. The following is the order. The corresponding rating of the seaman branch is given:

Seamen, First Class.

Seaman Branch.	Artificer Branch.	Special Branch.
Seamen gunners.	Firemen, first class.	Musicians, first class.
Seamen.		Ship's cooks, third class.
		Bakers, second class.

Seamen, Second Class.

Seaman Branch.	Artificer Branch.	Special Branch.
Ordinary seamen.	Firemen, second class.	Musicians, second class.
	Shipwrights.	Buglers.
		Hospital apprentices.
		Ship's cooks, fourth class.

Seamen, Third Class.

Seaman Branch.	Artificer Branch.	Special Branch.
Apprentice seamen.	Coal passers.	Landsmen.
	Landsmen.	

I.

SUBJECTS FOR SHIPWRIGHTS, CARPENTERS' MATES, SHIPFITTERS, BLACKSMITHS, PAINTERS.

1.

SHIPWRIGHTS

shall receive instruction in subjects "A" to "N," inclusive, as given in Part I of the Manual. In addition to this instruction, they shall receive such practical instruction as the chief carpenter may prescribe, subject to the approval of the executive officer.

Shipwrights are usually helpers. Therefore, at the start, the most important requirement is that they have a natural aptitude for the duties of a carpenters' mate, and learn the names and uses of the various tools.

The following questions are suggested:

Q. Name the various kinds of lumber that are in common use, classifying them as hard and soft woods.

A. Hard woods—oak, ash, hickory, mahogany, yellow pine. Soft woods—white pine, spruce, cedar, poplar.

Q. What are the Naval Instructions in regard to requisitions for white pine?

A. They shall be submitted only in cases where that material and no other will answer the purpose intended. When a cheaper material will answer the purpose it should be called for.

Q. Name the tools most commonly used by carpenters.

A. Saws, planes, claw hammers, screw drivers, gauges, chisels, squares, clamps and rules, braces and augers.

Q. What is a hand rip saw?

A. A saw with about 5 teeth per inch, set to cut wood with the grain.

Q. What is a hand cross cut saw?

A. One with about 9 teeth per inch, set to cut wood across the grain.

2.

CARPENTERS' MATES, 3D CLASS,

shall receive instruction in the Special Subjects for petty officers as given in Part III of the Manual, omitting such subjects as are obviously intended only for the seaman branch.

In addition, they shall receive such instruction as the chief carpenter may prescribe, subject to the approval of the executive officer.

Questions such as the following are suggested:

Q. Of what material are the spars of a service boat made? The oars?

A. The spars are usually made of spruce. The standard oars are of ash. Race boat oars are of selected spruce.

Q. What material is used in the following parts of service boats: Keel, Keelson, Frames, Planking, Gunwale, Risings, Decking, Thwarts?

A. Keel, oak; keelson, pellow pine or oak; frames, oak; planking, cedar; thwarts, oak or cedar; gunwale, oak; risings, oak; decking, pine.

Q. What is meant by the number of a wood screw?

A. The diameter of the stock as measured by a screw gauge.

Q. What is a "firmer chisel?" a "framing chisel?"

A. A firmer chisel is a light chisel used for ordinary joiner work. A framing chisel is heavier; it is used for larger work.

Q. How should a chisel be ground?

A. With a straight bevel, the edge square with the side of the stock.

Q. How are the sides of a ditty box joined to the ends?

A. By dovetail joints.

Q. How are the corners of mess tables protected?

A. Strip brass is bent around the corners to fit; it is secured by screws.

Q. What is a "miter joint"?

A. It is formed by beveling the edges of two pieces of material, usually to 45 degrees each, and then joining them.

Q. What are "dowels"? Where are they used?

A. They are pins of metal or wood used in making a butt joint. Part of the dowel fits in each piece, and the pieces are thus held in place.

3.

CARPENTERS' MATES, 2D CLASS,

shall receive the same instruction as has been prescribed for carpenters' mates, 3d class.

In addition to the questions suggested for carpenters' mates, 3d class, the following questions are suggested for carpenters' mates, 2d class:

Q. Name the principal tools used in carpentry.

A. Saws.—Cross, rip, panel, back, keyhole or compass.

Chisels.—Firmer, framing, wood turning and carving.

Planes.—Jack, fore smoothing and moulding.

Claw hammer, brace, bitts, rule, oil stone, saw set, gimlets, nail sets, screw drivers.

Q. Give instructions for the proper care of tools.

A. Keep them in a dry place. Always clean them before putting them away. Keep all edge tools and saws sharpened, and saw set, ready for use at all times.

Q. You are told that a boat at the gangway has a hole in the planking, just above the water line. The boat must be temporarily repaired for immediate use. What material and tools would you use to make such temporary repairs?

A. A piece of sheet lead, canvas or fearnaught cloth, white lead; claw hammer, tacks and a wood chisel.

Q. What is meant by one foot, board measure?

A. A piece of wood one foot square and one inch thick.

Q. Why is it necessary to steam planking for a boat?

A. So as to make it pliable and easy to bend into the shapes required in boat building.

Q. What do you mean by the floors in a Navy standard boat?

A. A fitted piece of oak that holds the heels of the frames together.

Q. How do you put together an ordinary door frame?

A. Mortise two sections of the frame; fit the other two sections with tenons to fit these mortises. Glue the parts together when assembled.

Q. Prior to coaling ship, you are directed to make a box for weighing coal. The contents of the box must be 20 cubic feet. What dimensions would you take for the box?

A. The following dimensions could be used: Length 4 feet, width 2½ feet, height 2 feet; or 5 feet by 2 feet by 2 feet.

Q. Give kind, size and quantity of material that would be required to replace a portion of a battleship's deck, 60 feet by 35 feet.

A. Long leaf yellow pine, 4 by 3½ inches. 9555 feet, board measure, would be required. 7350 feet for the actual area to be covered, plus 30 per cent, or 2205 feet, for waste in fitting.

Q. How many feet of lumber, board measure, in the following lot: 8 pieces, 4 inches by 6 inches, 20 feet long.

A. 320 feet board measure.

Q. What are your duties at Fire Quarters, Collision Quarters, Clear Ship for Action, Abandon Ship, Fire and Rescue Party?

Q. What is a Repair Station?

Q. What are your duties at General Quarters?

4.

CARPENTERS' MATES, 1ST CLASS,

shall receive the same instruction as has been prescribed for carpenters' mates, 2d class.

In addition to the questions suggested for carpenters' mates, 2d class, the following questions are suggested for carpenters' mates, 1st class:

Q. How many feet, board measure, does a board contain which is 16 feet long and 13 inches wide?

A. 17⅓ feet, board measure.

Q. How long is a ten penny nail? Approximately how many to the pound?

A. 3 inches in length. They run about 60 to the pound.

Q. What kind of wood is used in the planking of the ordinary service boats, and why is it used?

A. The planking is cedar, except that the sheer strake is usually made of oak. When properly steamed, cedar can easily be bent to the shape necessary in boat building; it withstands contact with salt wate rmuch better than other materials; it may be obtained in greater lengths than most other woods. Oak is used for the sheer strake in order to obtain the stiffness necessary at this point and to take the greater wear which occurs, due to oar pockets, sail fastenings, and wear incident to the service.

Q. State how to obtain the proper shape for a boat frame that has been badly damaged.

A. Make a template of the corresponding frame on the opposite side of the boat.

Q. Describe the method of taking a spiling of a boat plank.

A. Tack a flexible staff to the frames of the boat near the edge of the plank which the new plank is to join. Mark the frame numbers off on the staff, and, with a pair of dividers, spot off a fixed distance from the plank already in place, at the various frame numbers. When the staff is removed, lay it on the new plank and transfer the spot marks, taking care not to change the adjustment of the dividers. Strike in a fair line from mark to mark and, when the new plank is dressed to this line, a shape will be obtained, which, when the plank is steamed and bent into place, will be found to conform to the shape required.

Q. Why are soundings taken, and where is the opening of the sounding tube usually located?

A. Soundings are taken so that the amount of water in a compartment may be known without actually visiting the compartment. The tube openings are usually located at, or above, the protective deck. There are several reasons why the openings are located here. When taking soundings, the complete deck protection need not be disturbed by opening hatches. The protective deck is at the water line, and the compartments above this deck are less cut up with bulkheads, and are consequently clearer and larger.

Q. How do you fashion a spar from the rough material?

A. Take a rough stick of sufficient diameter and length to make the spar. At equal points of the diameter, for the entire length, strike in a center line. Run lines each side of the center, half the diameter of the finished spar. Cut the rough stick down to these lines, leaving it a rough, square, tapered stick, with the greatest dimension at the butt. Then cut the corners off to the diameter as marked on the butt and top, leaving it a rough, octagonal tapered stick. Dress off the corners, and finish to the diameter required.

Q. At what point of the draft mark is the even foot, and what is the height of the regulation draft figure?

A. The bottom of the draft mark indicates the even foot, and the draft figure is 6 inches high.

Q. What is the difference between a rim lock and a mortise lock?

A. A rim lock screws to the surface of a door. A mortise lock is one that fits into a mortise of a door or a drawer.

5.

CHIEF CARPENTERS' MATES

shall receive instruction in the Special Subjects for chief petty officers as given in Part IV of the Manual, omitting such subjects as are obviously intended for chief petty officers of the seaman branch only.

In addition they shall receive such instruction as the chief carpenter may prescribe, subject to the approval of the executive officer.

In addition to the questions suggested for carpenters' mates, 1st class, the following questions are suggested for chief carpenters' mates:

Q. Name the principal water pipe lines in a battleship with which the chief carpenter's mate should be familiar. Describe each briefly.

A. The drainage system; the flooding system; the fire main; the flushing system; the fresh water system.

1. THE DRAINAGE SYSTEM.—The *main drain* is usually of 15-inch galvanized steel pipe. It connects with all bilge pumps, and with the main circulating pumps. It extends the limit of the fire rooms and the engine room. In each compartment there is a valve operated from the deck at the water line. The main drain can take care of a large volume of water. The *auxiliary drain* is usually of 5-inch pipe. It is connected with all bilge pumps and to all bilges that can be flooded. The auxiliary, or secondary, drain is the system that is constantly in use to remove small quantities of water from the various compartments of the ship. The valves of this system may also be operated from the deck at the water line.

2. THE FLOODING SYSTEM is for the purpose of flooding magazines and other compartments below the water line. In the case of compartments on, or below, the lower platform deck, the flooding system connects directly with the sea. The system is controlled by an outboard and an inboard valve; the outboard valve is kept open constantly, and the inboard valve is operated from the protective deck level. Compartments above the lower platform deck level that need to be fitted with means for flooding are flooded through the fire main.

3. THE FIRE MAIN.—The following is a description of the fire main of a modern battleship: The fire main *in the fire and engine rooms* consists of *6-inch, steel, lead-lined piping*, running continuously through each fireroom, steam pipe passage and engine room, under the protective deck. Six-inch flooding valves and piping are fitted for all lower inboard and

outboard bunkers; these valves may be operated from the fire rooms, or from the ammunition passages on the berth deck. *Forward from the firerooms* the fire main continues through wing passages, *on each side,* to a designated frame, well forward, *where it joins amidships.* From this point, a *4-inch branch* leads *forward, on the starboard side,* to the forward pump room. One fire and bilge pump discharge pipe connects to each fire main in each fire room by means of a 5-inch pipe branching to both sides. These fire room pumps also connect to the flushing system by separate valves and pipes in the ammunition passage. Six-inch valves and pipes connect the fire main to both *distiller pumps* in the forward engine room. Six-inch valves and pipes connect the fire main to the engine room fire and bilge pumps in each engine room. The fire main runs *aft* through both engine roms, then *outboard and aft* through the wiring and wing passages, and *joins amidships,* at a frame well aft. From this point there is a hose connection leading aft to the steering gear compartment. The fire main is cross-connected at various points in order to allow a damaged portion of the pipe to be cut out without disabling the entire system. Branches, or risers, controlled by cut-out valves, extend up or down through the decks. To these risers are attached valves for fire plugs at the various deck levels. The fire main is also connected to the flushing system by a cross connection.

4. THE FLUSHING SYSTEM is the sanitary system of the ship. It supplies salt water to flush all water closets, urinals and baths. It is connected with the fire and bilge pumps, also to the distilling pump and to the fire main by a system of cross connections.

5. THE FRESH WATER SYSTEM distributes fresh water from the gravity tanks to the various points throughout the ship where fresh water may be required. The gravity tanks are kept full by a pump connected with the fresh water tanks.

Q. Describe *in detail* the drainage, and the flooding systems; the fire main; and the flushing and fresh water systems of the ship to which you are attached.

Q. How do you flood the following compartments? (Give list of compartments.)

Q. In ship-building, what is the purpose of longitudinals, reverse frames and floors?

A. Longitudinals add the required strength in a fore-and-aft direction. They are usually intercostal with the frames to which they are clipped or stapled. They are watertight or non-watertight according to their location.

A reverse frame is the inboard angle connected to the main frame angle by means of the floor plate. The heel of this angle bar is reverse to the main frame angle bar. In this manner a faying surface, or landing, is formed for the inner bottom plating in the same manner that the main frame angle bar forms a faying surface for the shell plating. The limits of the inner bottom are also the limits of the reverse frames.

The floors are the plates that connect the main and the reverse frames, and thus regulate the depth of the inner bottom spaces. They are either watertight or non-watertight, depending on their location in regard to the subdivisions of compartments.

Q. How would you prepare a piece of round bar steel for welding?

A. Upset the end to be welded, and draw it out into a scarf, thus forming a wide, tapering bearing or welding surface. In welding steel, borax is used as a flux so as to insure the fact that the metal will be united for the entire width of the scarf.

Q. A heavy weight has dropped on deck and seriously damaged 6 deck planks. State how to remove and replace the damaged planking. The decking is of 4-inch by 3½-inch yellow pine, laid on a steel deck.

A. Determine the distribution of butts, for the portion of deck to be removed. Remove the deck bolts. Cut out the damaged planks at predetermined points. Remove the old planks. Clean the steel deck and fit new planks in place. Bore and counter-bore bolt holes for heads of bolts. Paint the steel deck with heavy red lead. Put back the deck planking in place as it was originally fitted. Fit grommets on deck bolts and secure deck planking by means of the bolts. Plug the open counterbores for deck bolts with suitable plugs. Caulk the seams with one thread of caulking or spun cotton and three threads of oakum. Partially pay the seams with marine glue. Plane off planks flush with the surrounding deck and then fill the seams completely with marine glue.

Q. Describe briefly the METHOD OF VENTILATING a modern battleship. What precautions are taken to preserve watertightness, when it becomes necessary to run air ducts through bulkheads and decks?

A. A modern battleship is ventilated by means of electrically driven fans of suitable size and capacity to furnish a change of air in compartments. The air in living quarters is changed at shorter intervals than the air in compartments less frequently occupied. The ventilation system is divided into about 20 units. The extent of such units is largely controlled

by the distribution of watertight bulkheads. Spaces such as the sick bay, water closets, and laundry are fitted with exhaust systems of ventilation, in addition to the supply systems, in order that the air may be changed without permeating the ship with the air from such quarters. The heating of the vessel is often accomplished by means of steam coils encased in boxes of sheet metal through which the fresh air from outside may be so diverted as to pass over and around the steam coils when heating is desired.

Where air ducts pass through watertight bulkheads or decks at any point below the water line, or from about 8 feet above the water line, watertightness is preserved by using galvanized steel tubing or pipe with screw and flange joints, making the system absolutely watertight.

Q. What is protective paint, anti-corrosive paint, anti-fouling paint?

A. Protective paint is a metallic pigment compound used to protect steel, or other metal, from corrosion. It will also protect wood from the deteriorating effects of the atmosphere. *Red lead* is the common protective paint used on metal surfaces. *White lead* is similarly used on wooden surfaces.

Anti-corrosive paint is a quick drying paint compounded of alcohol and a metallic pigment. It is used principally on the underwater body of steel vessels.

Anti-fouling paint is another quick drying paint compounded of alcohol and a metallic pigment. It prevents, or greatly reduces, the fouling of a ship's bottom. It is the last coat of paint applied just before leaving dry dock.

Q. Where do you find the general instructions for painting and cementing vessels of the Navy?

A. In a pamphlet published by the Bureau of Construction and Repair, entitled "GENERAL INSTRUCTIONS FOR PAINTING AND CEMENTING VESSELS OF THE U. S. NAVY." These instructions prescribe the manner of preparing the surface, the details of the painting, and the methods of preparing and application of paint. The Naval Instructions direct that these instructions be adhered to absolutely.

Q. How much red lead will be required to give one coat to a surface 100 feet long by 20 feet wide?

A. The surface is 2000 square feet in area. About 4 gallons of red lead of Navy standard mixture will be required. The covering capacity of red lead is about 56 square yards per gallon.

Q. It is found that the fresh water of the ship is very much discolored by rust or dirt. How would you determine the cause

of such a condition? If you finally discovered that the trouble was due to the condition of the ship's tanks, how would you remedy such a condition?

A. Examine the gravity tanks. Clean them thoroughly and coat them with cement wash. If there is no corrosion in the gravity tanks, the source of the trouble will be found in the main fresh water tanks. Empty the tanks, clean them and touch up the rust spots (after thoroughly scraping them) with brush cement, then give the entire inside of the tanks a coat of cement.

Q. What are DOCKING KEELS, where are they located, how are they usually secured? How is blocking arranged for them?

A. Docking keels are extensions secured to the outer plating of a vessel, within the limits of the comparatively flat section. The lower, or landing, face of the docking keel is on a line parallel with the face of the outer keel plate and at an equal distance from the vertical keel; this distance is determined by the location of the longitudinal stiffening. Docking keels are usually secured by means of tap rivets extending through the shell plating sufficiently to allow a grommet washer and nut to be fitted, after screwing through the shell plating. The blocking is so arranged that when the vessel lands on the keel blocks, the docking keels will take the weight at the same time. The blocks in all cases are placed beneath the frames.

CHIEF CARPENTERS' MATES MUST BE ABLE TO READ AND WRITE ENGLISH AND HAVE SOME KNOWLEDGE OF ARITHMETIC: HAVE PREVIOUS NAVAL SERVICE OF NOT LESS THAN 3 YEARS; MUST BE EXCELLENT MECHANICS, THOROUGHLY FAMILIAR WITH ALL WOODWORKING REPAIRS GENERALLY REQUIRED ON BOARD SHIP; BE ABLE PROPERLY TO HANDLE ALL TOOLS REQUIRED IN THIS WORK, AND BE FAIRLY WELL ACQUAINTED WITH SHIP CONSTRUCTION; HAVE SUFFICIENT KNOWLEDGE OF THE PUMPING AND DRAINAGE SYSTEMS TO BE ABLE TO PUMP COMPARTMENTS; MUST HAVE A FAIR KNOWLEDGE OF THE STEAM STEERING ENGINE AND BE THOROUGHLY FAMILIAR WITH THE CAPSTAN, WINDLASS AND DECK WINCHES, AND BE ABLE TO OPERATE THE SAME; MUST KNOW WHAT VALVES TO CLOSE WHEN THE DRY DOCK IS BEING FLOODED PREPARATORY TO TAKING A VESSEL OUT OF DOCK; MUST BE THOROUGHLY FAMILIAR WITH THE INSTRUCTIONS FOR THE CARE OF AIR PORTS, MANHOLES, BATTLE HATCHES, AND WATERTIGHT DOORS; AND HAVE SUFFICIENT KNOWLEDGE OF STORES TO ENABLE THEM TO EXERCISE FULL CARE OF THE SAME.

Q. Why should you be thoroughly familiar with the duties of the carpenter, as given in the Navy Regulations and the Naval Instructions?

A. Because, in the absence of that officer, you may be called upon to perform his duties.

Q. What are these duties?

A. The chief carpenter, or carpenter, is an assistant to the first lieutenant.

2. The chief carpenter, or carpenter, shall critically examine all construction stores and spare articles, and shall report any defect or deficiency that he may at any time discover to the first lieutenant.

3. He shall strictly comply with the regulations and other instructions concerning the care, preservation and repair of ships. (Naval Instructions, Chapter 25.)

4. He shall see that all fire-extinguishing apparatus, except the steam fire pumps and their appurtenances, are kept in order and always ready for immediate use. He shall be held accountable for the good condition of all hand pumps, with their attachments, pipes, drains, valves, and other appurtenances, except such as are within the engineer compartments.

5. So far as possible, he shall keep at hand and ready for use apparatus for repairing damages received in action.

6. He shall be held responsible for the good condition and cleanliness of all capstans and windlasses (except the engines of the same), the steering apparatus (except the steam steering engine), winches, pumps, valves, air ducts and pipes that come under the cognizance of the Bureau of Construction and Repair. So far as possible, he shall use the carpenter's gang in the care and operation of the machinery under his charge, but additional men may be detailed, if necessary, to assist in these duties.

7. He shall report to the first lieutenant any repairs that he may deem necessary.

8. He shall take the draft of the ship when entering, and just before leaving port, and report it to the navigating officer and to the officer of the deck.

9. He shall see that the air and all other ports are kept in good condition and watertight.

10. In action, the duty of the chief carpenter, or carpenter, shall be to repair damages. His station at quarters and at all hands shall be as the captain may direct.

11. The carpenter shall assist the first lieutenant in the inspection and care of all compartments, watertight doors, double

bottoms, and mechanical devices for the management and safety of the vessel, outside the engineer department.

12. He shall, in ships where it would be appropriate when at sea, examine the spars during every morning watch and report their condition to the officer of the deck.

13. He shall frequently examine the lightning conductors and see that they are kept in good condition.

14. He shall keep in place and ready for use at all times the apparatus used for battening down hatches.

15. When at sea, the officer of the deck shall require the chief carpenter, or carpenter, or one of his mates, to sound the well in each compartment and examine all ports that should be closed, reporting the result at least twice during each watch. When water ballast is admitted, the chief carpenter, or carpenter, shall himself examine the state of the water, and report at 8 a. m. and 8 p. m.

Q. The carpenter is required strictly to comply with the regulations and instructions concerning the care, preservation and repair of ships. Where does he find such instructions?

A. In Chapter 25 of the Naval Instructions. "The Care and Preservation of Hulls of Ships and of Mechanical Contrivances Pertaining Thereto."

Q. What routine reports must be made by the chief carpenter, or the carpenter, or the chief carpenter's mate acting in that capacity?

A. 1. At 8 a. m. and at 8 p. m. report to the executive officer the condition of the ship and her appurtenances, so far as his department is concerned.

2. At sea make sure that the well in each compartment is sounded, and examination made of all ports that should be closed, twice each watch. Report the result of each inspection to the officer of the deck.

3. When water ballast has been admitted, examine the state of the water twice a day, and report at 8 a. m. and at 8 p. m. to the officer of the deck.

4. Entering and leaving port, report the draft to the navigator and to the officer of the deck.

5. When leaving port, report that all watertight compartments and air ports are secure.

6. Before and after coaling, report the draft of the ship and the draft of the collier, together with her tons per inch immersion.

7. Report weekly to the first lieutenant the fact that all valves under cognizance of the Construction and Repair Department have been oiled and operated, as well as all ventilation cowls,

winches and cranes. Also report the result of the examination of watertight doors.

Q. What are the instructions governing the APPOINTMENT OF CARPENTERS?

A. 1. A candidate for appointment as carpenter, who, at the time of making application, is enlisted in the Navy, must not be more than 35 years of age. A candidate from civil life must not be less than 21 or more than 30 years of age.

2. He must be a good mechanic, with a general knowledge of practical shipbuilding in wood, iron and steel, and of the qualities and strength of the materials used therein. He must be able to read plans, make working sketches, furnish estimates of cost of work, and keep account of stores. He must understand the care and preservation of ships, their equipment and fittings, and the care and operation of such apparatus and machinery as he may be required to look after on board ship. He must be familiar with the precautions that must be taken in docking and undocking ships.

3. He must be able to read and write with facility; must understand the first four rules of arithmetic, and proportion; must be able to keep a correct account of stores and must be thoroughly conversant with all drills and regulations of the Navy pertaining to the duties of a carpenter.

4. A newly appointed carpenter shall, when practicable, be attached to the hull division of a Navy Yard for at least 6 months before he is ordered to a seagoing vessel in order that he may become conversant with his duties on board ship, and be instructed in the care and operation of such auxiliary machinery as may come under the construction officer.

6.

SHIPFITTERS

shall receive instruction in the Special Subjects for petty officers as given in Part III of the Manual, omitting such subjects as are intended only for the seaman branch.

In addition they shall receive such instruction as the chief carpenter may prescribe, subject to the approval of the executive officer.

Questions such as the following are suggested:

Q. Name the principal tools used in shipfitting.

A. Chipping and caulking tools, riveting hammers, drills, taps and dies, reamers, drift pins, rules, chalk lines, files and center punches.

Q. What is the thickness of a 10 pound plate?

A. ¼-inch.

Q. What size rivets would you use in working with 10 pound plates?

A. ⅝-inch and ¾-inch.

Q. What is a clearance hole? A tap hole?

A. A clearance hole is one of a diameter sufficient to allow a rivet or a bolt to pass through easily. It is usually 1/16 inch larger than the rivet or bolt.

A tap hole is one drilled to a diameter equal to the diameter of the bottom of the threads of a tap. When the tap is run into this hole, there will be sufficient material to allow for the thread.

A clearance hole is always used for a pan head, or other straight rivet; but a tap hole is used when drilling for a tap rivet.

Q. HOW TEST A WATERTIGHT DOOR?

A. Chalk the knife edge of the door frame, then close the door and set up uniformly on the dogs. If the door is watertight the chalk leaves a complete mark around the rubber gasket when the door is opened.

Q. What test is used before the ship goes in commission?

A. The water pressure test. The compartment is filled with water. This test has the additional advantage of indicating the strength of the door and its fastenings, and its ability to withstand the head of water to which it might be subjected if accident occurred.

Q. What is the "faying surface" of plates? What precaution is taken to protect the plates at the faying surface?

A. The faying surface is that part which is covered up when the plates are bolted or riveted together. The faying surface should be thoroughly cleaned and a coat of red lead applied. As this part is always inaccessible until the plates are cut apart, corrosion at this point always gives trouble from leakage.

Q. What is a red lead putty pump? How is it used?

A. It is used to inject red lead between two faying surfaces when a leak has developed. To use the pump, drill a tap hole through the first course of plating, tap the hole to the size of the thread at the discharge end of the putty pump. Fill the pump with red lead of the proper consistency, and screw the discharge end into this hole. By screwing down on the plunger rod of the pump, the red lead is forced into the interstices between the two plates.

7.

BLACKSMITHS

shall receive instruction in the Special Subjects for petty officers as given in Part III of the Manual, omitting such subjects as are intended for the seaman branch only.

In addition, they shall receive such instruction as the chief carpenter may prescribe, subject to the approval of the executive officer.

Questions such as the following are suggested:

Q. What marked characteristics distinguish wrought iron from steel?

A. Wrought iron has a long fiber, or grain, while steel is glossy and crystalline. Wrought iron parts in an irregular, jagged manner; while steel parts more evenly.

Q. What are the principal tools used by blacksmiths?

A. Anvil, hand and sledge hammers, hot and cold chisels, swages, fullers, flatters and hardies.

Q. Describe each of these tools? What is each used for?

Q. What is TEMPERING?

A. It is the process of giving the required degree of hardness to a piece of steel by heating it to a cherry heat, then suddenly plunging it in cold water. Then the steel is reheated and allowed to pass through the various colors until the desired color appears; this color indicates the degree of hardness. Oil is also used in tempering. Oil tempering is a slower process; it allows the entire mass of metal to attain a uniform degree of hardness, and it is therefore more suitable for the purpose of making steel spiral, or other springs.

Q. What is CASE HARDENING?

A. It is a method of hardening the surface of wrought iron or steel. It is accomplished by heating the metal to a bright red heat, then applying cyanide of potassium to the surface. On the number of times this process is repeated depends the thickness of the hardened case.

Q. What is WELDING?

A. When two pieces of steel or wrought iron are heated almost to the point of fusion, and are then hammered together, they unite. The strength of the weld depends on the thickness of the metal, and the care with which the operation is performed?

Q. What precautions do you take in work involving welding?

A. The fire must be clean. It should be freshly made. The material to be welded should be carefully selected, and the proper flux should be at hand.

Q. How detect a defective link in the anchor chain while heaving up the anchor?

A. Take station along the path of the chain, preferably at a point where the chain is in suspension off the deck (for example, where it passes over a controller). As each link passes, strike it a solid, but not too hard a blow. The sound quickly indicates the condition of the link. A defective link will not give a clear, ringing sound.

Q. What precautions should a blacksmith take when it is necessary to build a fire in the forge?

A. Obtain permission from the officer of the deck to light the fire. Have a large tarpaulin ready to spread on the deck beneath the forge and anvil so you will not litter up the deck with ashes and coal. Take care not to allow small pieces of hot metal to fall on the deck and burn holes in it.

Q. What about tools for shackling and unshackling anchor chain?

A. They should be kept in a convenient place at all times. All tools should be kept in first class condition, ready for use at any time in order to be prepared for emergencies.

8.

PAINTERS

shall receive instruction in the Special Subjects for petty officers as given in Part III of the Manual, omitting such subjects as are intended for the seaman branch only.

In addition, they shall receive such instruction as the chief carpenter may prescribe, subject to the approval of the executive officer.

Questions such as the following are suggested:

Q. What are the instructions regarding the care of the paint locker?

A. The paint locker must be kept scrupulously clean. No oily waste and paint scrapings from cans shall be allowed to accumulate. No alcohol, turpentine or other inflammable material shall be stored in the compartment. Tightly cover all paint mixing cans and, if possible, have the compartment connected with the exhaust ventilation system.

Q. How do you take care of paint brushes?

A. Clean them with turpentine, as soon as they are returned to the paint locker. Then hang them in an upright position in a tank of water, leaving the bristles about two-thirds sub-

merged. Treat varnish brushes the same way, except use varnish instead of water, and keep the tank covered.

Q. What do you do with the paint remaining in pots after they are returned?

A. Strain all the returned paint back into a tank. Match it with the standard paint, then re-issue.

Q. What are the ingredients of standard red lead mixture?

A. Dry red lead, raw linseed oil, petroleum spirits, or turpentine and drier.

Q. What preparatory work is necessary before applying red lead? How do you estimate the quantity required?

A. Carefully and thoroughly scale, scrape and clean all steel or iron work down to the bare metal surface before applying the red lead. To estimate the quantity required, measure the surface to be coated, and allow one gallon of red lead for every 56 square yards of surface.

Q. For what purpose is Damar Varnish used?

A. For making white enamel paint. It must be mixed with white zinc.

Q. What is boot topping? Where is it used?

A. It is a quick drying paint. It is used on the side at the waterline, in water ways, and, generally for the purpose of covering bare metal that is exposed to the weather.

Q. What do you add to white paint in order to make slate color?

A. Add lampblack in oil until you obtain the desired shade of slate color.

Q. What is the thickness of single and double glass?

A. Single, 1/16 inch; double, 1/8 inch.

NOTE.—THESE QUESTIONS ARE MERELY TYPICAL ONES. ALL PAINTERS MUST BE ABSOLUTELY FAMILIAR WITH THE PAMPHLET ISSUED BY THE BUREAU OF CONSTRUCTION AND REPAIR, ENTITLED "GENERAL INSTRUCTIONS FOR PAINTING AND CEMENTING VESSELS." THIS PAMPHLET CONTAINS FORMULAS FOR MIXING ALL PAINTS, AS WELL AS COMPLETE INSTRUCTIONS FOR PAINTING.

Q. In finishing a piece of joiner work you notice knots and discolored places; how would you remedy such a condition?

A. Give the surface a coat of shellac, smooth with sandpaper, then go ahead with the painting.

Q. What are the standard colors for piping for the Navy?

A. See plate.

STANDARD COLORS FOR PIPING FOR UNITED STATES NAVY.

STEAM PIPING	SUPPLY	WHITE 4" BLACK 4" WHITE
	EXHAUST	WHITE RED WHITE
SALT WATER PIPING STEAM & HAND PUMPS, SEA SUCTIONS & DELIVERIES, FLUSHING MAIN & BRANCHES	SUCTION	GREEN BLACK GREEN
	DELIVERY	GREEN RED GREEN
FRESH WATER PIPING STEAM & HAND PUMPS, SUCTIONS & DELIVERIES, FRESH WATER MAIN & BRANCHES.	SUCTION	LEAD COLOR BLACK LEAD COLOR
	DELIVERY	LEAD COLOR RED LEAD COLOR
HYDRAULIC PIPING	SUPPLY	BLUE BLACK BLUE
	EXHAUST	BLUE RED BLUE
VENTILATION PIPING	SUPPLY	YELLOW BLACK YELLOW
	EXHAUST	4" YELLOW RED 4" YELLOW
FUEL OIL PIPING	SUCTION	2" RED 2" WHITE 2" RED BLACK 2" RED 2" WHITE 1" RED
	DELIVERY	RED WHITE RED RED RED WHITE RED
	COMMON SUCTION & DELIVERY	2" RED 2" WHITE 2" RED RED 2" RED 2" WHITE 2" RED BLACK
MAIN & AUXILIARY DRAINS SCUPPERS, FLOOR & OTHER DRAINS, AIR PIPES AND SOUNDING PIPES.		4" WHITE WHITE 4" WHITE
FIRE MAIN		RED RED RED
FLOODING PIPES FOR MAGAZINES, TRIMMING TANKS, ETC.		WHITE 4" RED WHITE 4" RED WHITE
PNEUMATIC PIPING		BLACK BLACK BLACK

NOTE.—(See opposite page.) Piping for Carbon Dioxide fire extinguishing system will be painted as follows: Flanges black; 2 inches each side of flanges, white; 6 inches each side of white stripe to be painted black; remainder of piping in any one compartment to be painted the same color as that compartment.

QUESTIONS FOR ALL DECK ARTIFICERS.

Q. What is a REPAIR STATION?

Q. What are your duties at fire quarters, collision quarters, general quarters, abandon ship, clear ship for action, getting underway, coming to anchor?

Q. What is the order of precedence of chief petty officers and petty officers of the artificer branch?

A. See table, page 787.

Q. Where may all deck artificers find information in regard to their duties?

A. In "The Naval Artificer's Hand Book," by Chief Carpenter McCall Pate, U. S. Navy, published by the U. S. Naval Institute at Annapolis, Maryland.

9.

PRINTERS

shall receive instruction in the Special Subjects for petty officers, as given in Part III of the Manual, omitting such subjects as are intended for the seaman branch only.

II.

FIREMEN, OILERS, WATER TENDERS, MACHINISTS' MATES, ELECTRICIANS, BOILERMAKERS, PLUMBERS AND FITTERS, COPPERSMITHS.

FIREMEN

shall receive instruction in and be required to prove a thorough knowledge of subjects "A" to "N," inclusive, given in Part I of this Manual.

In covering these subjects, the following questions are *suggested* in addition to any others that the examining board may formulate:

1. What are your duties at fire quarters, collision quarters, general quarters, abandon ship? (a) Your section is on watch,

(b) Your section is relief section, (c) Your section is second relief.

2. What are the instructions regarding leaning on the rail or the life lines, sitting on life lines, or on chocks along the rail?

3. What are the instructions regarding the use of the firemen's wash room?

4. What are the instructions in regard to keeping paint work clean?

5. What uniform is the only one permissible on the main deck?

6. What are the regulations in regard to smoking?

7. What are the regulations in regard to saluting officers on shore?

8. What is the position of attention? What is the difference between the command "At ease," and the command "Rest"?

9. What is the prescribed punishment for overstaying liberty? (a) Less than 24 hours. (b) Exceeding 24 hours. (c) In the case of repeated offences.

10. What is the scheduled punishment for absence without leave? For desertion?

11. What are the advantages of honorable discharge? How may an honorable discharge be obtained?

Further instructions for men of these ratings will be as prescribed in the manuals issued by the Bureau of Steam Engineering.

OILERS, WATER TENDERS, MACHINISTS' MATES, ELECTRICIANS, BOILERMAKERS, PLUMBERS AND FITTERS, COPPERSMITHS.

Chief petty officers of these ratings shall receive instruction in the Special Subjects for chief petty officers, as given in Part IV of the Manual, omitting such subjects as are obviously intended for chief petty officers of the seaman branch only.

Petty officers of these ratings shall receive instruction in the Special Subjects for petty officers, as given in Part III of the Manual, omitting such subjects as are obviously intended for petty officers of the seaman branch only.

Further instruction for men of these ratings will be as prescribed by the Bureau of Steam Engineering.

All petty officers of these ratings should know the precedence of petty officers of the artificer branch as given on page 787.

In all examinations for promotion, a satisfactory answer to the following question is required.

Q. What are your duties at fire quarters, collision quarters, abandon ship, clear ship for action?

III.

YEOMEN.

All chief yeomen shall receive instruction in the Special Subjects for chief petty officers, omitting such subjects as are obviously intended for the seaman branch only.

All yeomen shall receive instruction in the Special Subjects for petty officers, with the same omission.

In addition to the above, all chief yeomen and yeomen shall receive instruction in and must show a thorough knowledge of the following subjects:

"Y-1."

ROUTINE DUTIES.—Rating, disrating, transfer, enlistment, preparation of discharges, method of keeping service records.

The following are suggested as typical questions under this heading:

1. What entries must be made on service records?
2. When a man is transferred from one ship, or station, to another, what papers are transmitted?
3. What information does a gunnery record contain?
4. What is a certificate of qualification, and who gets it?
5. What is an appointment? A permanent appointment?
6. What are the various kinds of discharges?
7. What is a C. S. C., or continuous-service certificate, and who is entitled to it? What information does it contain?
8. You are directed to prepare an honorable discharge. You find that you have no honorable discharge forms at hand. How do you prepare the honorable discharge?
9. What is a conduct book?
10. Under what circumstances are men given bad conduct and dishonorable discharges?
11. Upon a man's discharge, desertion or death, what is done with his service record?
12. A continuous-service man is discharged. What is done with his continuous-service certificate?

"Y-2."

CORRESPONDENCE; GENERAL INFORMATION.

This includes typewriting.

No one will be rated a yeoman who cannot write 10 words or more, a minute.

Marks in typewriting will be as follows:

30 WORDS A MINUTE, WITH NO ERRORS, 100 PER CENT.

Deduct 1 per cent for each word less than 30.

Deduct 3 per cent for each error in spelling, punctuation omission, repetition, substitution, or striking one letter over another.

Deduct 1 per cent for each erasure, unclean type, punctuation marks through paper, failure to hit type clearly, improper margin, misdivision of word at end of line, or any minor deviation from copy.

NO ONE SHALL BE RATED A YEOMAN WHO FALLS BELOW 70 PER CENT IN THE EXAMINATION IN TYPEWRITING, MARKED AS SPECIFIED ABOVE.

This subject will also include PENMANSHIP and SPELLING. The examining board will dictate a letter of at least one hundred words to the candidate for advancement in rating. This letter he will write out in long hand in a manner satisfactory to the board.

The following are typical questions for the examination under the head of correspondence:

1. How many subjects of unlike nature may be written in one letter?
2. Describe in detail the official paper required to be used in writing letters. What margin at the top and sides?
3. What letter heads are to be used in different cases?
4. What special sub-letterheads are used?
5. What are the instructions in regard to letters written at sea?
6. Explain the use of "From," "To," and "Subject."
7. How do you write the brief of the subject?
8. What are the instructions in regard to endorsements?
9. Do you repeat the subject when writing endorsements?
10. What immediately follows the brief of the subject?
11. In acknowledging letters, what numbers should be included in the reference?
12. What are the instructions in regard to enclosures?
13. Where do you write the file number?
14. How many spaces between paragraphs?

15. Between endorsements?
16. How designate paragraphs and sub-paragraphs?
17. Where do you place stamps showing the date of receipt?
18. Where do you write endorsements that affect pay and transportation?
19. Write a letter on a given subject, and make out three endorsements.
20. How arrange the sheets of a report?
21. How do you attach enclosures?
22. Where do you number the pages of a letter?
23. How do you fold a letter?
24. What three classes of official mail are there?
25. State the differences that exist between these classes.
26. Who opens official mail?
27. Make out an application for 30 days' leave of absence.
28. Begin a letter from the commanding officer to the Bureau of Steam Engineering.
29. How address official communications from the ship to the Navy Department?
30. Send a telegram to the Department reporting the arrival of your ship at New York.
31. How make out returns?
32. How write letters in regard to repairs?
33. State the general instructions for filing letters.

GENERAL INFORMATION.—Candidates for yeomen, and all yeomen shall be instructed and examined in the first four rules of arithmetic, fractions, decimals, interest; geography and current history. The examining board will formulate suitable questions under this heading.

"Y-3."

THE NAVY REGULATIONS.—Yeomen must be experts in the Navy Regulations and the Naval Instructions. In addition to the chapters of the regulations covered under subjects "Y-1" and "Y-2," the following are most important: "Reports and Returns," "Deck Courts," "Store Afloat," "Sales and Surveys of Material," "Navy Regulations, Naval Instructions, General Orders."

Questions such as the following are suggested:

Q. What publications contain all general rules and regulations for the guidance of all persons in the naval establishment?

A. 1. Navy Regulations.
2. Naval Instructions.
3. Navy Department, General Orders.
4. Changes in Navy Regulations Circulars.
5. Changes in Naval Instructions Circulars.
6. Court Martial Orders.
7. Signal books and drill books.
8. Uniform Regulations.
9. Forms of Procedure for Courts and Boards in the Navy and Marine Corps.
10. Manuals, or circulars of instructions, issued by any Bureau or Office which may be approved by the Secretary of the Navy.

Q. In general, what difference is there between the Navy Regulations and the Naval Instructions?

A. The Navy Regulations include all regulations that require the original approval of the President. Consequently, the President must, in like measure, approve any change. In general, questions of principle shall be included in the Navy Regulations, while detailed instructions as to the methods of applying such principles shall be issued in the Naval Instructions.

Q. What are Navy Department General Orders?

A. All orders of permanent or temporary application addressed to the Naval service, ceremonial orders, commendations of persons in the service, and similar matters not affecting the Navy Regulations, or the Naval Instructions that may be decided upon from time to time by the Secretary of the Navy. Instructions as to administration shall not be issued in general orders, but shall be promulgated as changes in the Navy Regulations, or the Naval Instructions, as may be appropriate.

Q. What are Changes in Navy Regulations Circulars?

A. All changes ordered in regulations. They are signed by the Secretary of the Navy and approved by the President. These changes must be made in the Regulations as soon as received, either by making the changes in ink, or by inserting entire new pages in the loose leaf binder, in accordance with the instructions contained in the circular.

Q. What are Changes in Naval Instructions Circulars?

A. They contain all changes in the Naval Instructions. They must be signed by the Secretary of the Navy.

Q. What are Court Martial Orders?

A. They publish to the service such extracts from the records of proceedings of court martial and from the action of

the Department thereon as may be deemed advisable. They are signed by the Secretary of the Navy.

Q. You are ordered as recorder of a deck court martial. Where do you find complete information in regard to your duties?

A. In the book entitled "Forms of Procedure for Courts and Boards in the Navy and Marine Corps."

Q. What about the manuals or circulars of instructions issued by any Bureau or office?

A. They include instructions that pertain solely to the Bureau or office by which they are issued. They shall in no way alter or amend any provision of the Navy Regulations or Naval Instructions or of any Navy Department General Order. Each such manual or circular shall be signed by the chief of the bureau or head of the office concerned and shall bear the signed approval of the Secretary of the Navy. The most important publications that fall under this heading are the Orders for Gunnery Exercises, Rules for Engineering Competitions and the circulars issued from time to time by the Bureau of Navigation for the information of commanders-in-chief and commanding officers. The attention of yeomen detailed as captain's yeomen or executive officer's yeoman is especially called to these circulars as they contain many detailed instructions in regard to the correct methods of keeping service records, as well as instructions in regard to ratings, disratings, discharges, and transfers. They point out the right way, or the Bureau method of carrying out duty of this nature.

In addition to being an expert in the Navy Regulations, a yeoman should be an expert in the Fleet Regulations. These are instructions issued by the commander-in-chief of a fleet for the guidance of those under his command. Of course, such fleet regulations never conflict with the Navy Regulations; they principally are concerned with fleet routine and correspondence.

"Chief yeomen must be typewriters, and good, accurate copyists. They must be familiar with the handling of correspondence, with the regulations governing correspondence, and with the regulations relating to enlistments, discharges, transfers and promotions. They must also be sufficiently familiar with bookkeeping to keep a record of stores and prepare requisitions, and they must be familiar with the kinds of stores of the various departments and the handling and stowing of the same."

This paragraph is a quotation from one of the circulars issued by the Bureau of Navigation "For the Information of Commanders-in-Chief and Commanding Officers."

YEOMEN ATTACHED TO THE PAY DIVISION.

In addition to the subjects specified above, yeomen attached to the pay division shall receive instruction in such subjects as the Bureau of Supplies and Accounts may prescribe. That Bureau publishes manuals for the instruction and guidance of these yeomen.

MISCELLANEOUS QUESTIONS FOR YEOMEN.

1. How call a survey on articles of equipment?
2. How make a requisition for any article?
3. What are your duties in regard to the stores under the charge of a head of department?
4. What are the Navy Regulations?
5. What are the Naval Instructions?
6. How are general orders issued?
7. What are circular letters?
8. What is the guard mail?
9. What are G. C. M. orders?
10. What are fleet regulations?
11. What are the laws in regard to the use of the penalty stamp?
12. Where do you find complete instructions regarding correspondence?
13. What are quarterly returns?
14. What is the regulation in regard to the ship's keys?
15. What about sleeping in offices? (I 809.)
16. What about lights and fans in offices?
17. Boat etiquette?
18. Salutes?
19. Watertight doors below armor belt?
20. Regulations in regard to marking clothes?
21. Throwing articles out of the air ports?
22. Duties at all general drills? Duties in regard to confidential papers?

IV.

COMMISSARY STEWARDS, SHIP'S COOKS, BAKERS

CHIEF COMMISSARY STEWARDS shall receive instructions in the Special Subjects for all chief petty officers as given in Part IV of the Manual, omitting such subjects as are obviously intended for the seaman branch only.

In addition they shall receive such instruction as the Bureau of Supplies and Accounts may prescribe.

COMMISSARY STEWARDS; SHIP'S COOKS, FIRST AND SECOND CLASS, AND BAKERS, FIRST CLASS

shall receive instruction in the Special Subjects for all petty officers as given in Part III of the Manual, omitting such subjects as are obviously intended for the seaman branch only.

In addition they shall receive such instruction as the Bureau of Supplies and Accounts may prescribe.

SHIP'S COOKS, THIRD AND FOURTH CLASS, AND BAKERS, SECOND CLASS

are not petty officers. In place of a rating badge, they wear the specialty mark of a ship's cook, without eagle or chevrons. This mark is worn on the left arm.

Men of these ratings shall receive instruction in subjects "A" to "N," inclusive, as given in Part I of the Manual, and such additional instruction as the Bureau of Supplies and Accounts may prescribe.

Q. What drills are commissary stewards, cooks and bakers required to attend?

A. Clear Ship for Action, General Quarters, Fire Quarters, Abandon Ship and Target Practice.

When food is being prepared at the galley or oven for use—except in the case of actual emergency—a sufficient number of cooks and bakers shall be left in charge.

Q. Have each man of these ratings fully explain his station and duties at all general drills.

V.

CHIEF PHARMACISTS' MATES, HOSPITAL APPRENTICES.

CHIEF PHARMACISTS' MATES and PHARMACISTS' MATES shall receive instruction in the Special Subjects for all chief petty officers and all petty officers respectively, omitting such subjects as are obviously intended for the seaman branch only.

HOSPITAL APPRENTICES, first and second class, are not petty officers. They wear the specialty mark on the left arm, without eagle or chevrons, in place of a rating badge.

They shall receive instruction in subjects "A" to "N," inclusive, and such additional instruction as the Bureau of Medicine and Surgery may direct.

VI.

BANDMASTERS; FIRST MUSICIANS; MUSICIANS, FIRST AND SECOND CLASS; BUGLERS.

BANDMASTERS shall receive instruction in the Special Subjects for all chief petty officers, omitting such subjects as are obviously intended for the seaman branch only.

FIRST MUSICIANS are classed as petty officers, first class. They shall receive instruction in the Special Subjects for petty officers, as given in Part III, omitting such subjects as are obviously intended for petty officers of the seaman branch only.

MUSICIANS, FIRST AND SECOND CLASS are not petty officers. They shall receive instruction in subjects "A" to "N," inclusive, given in Part I of the Manual.

In addition to the above instruction, First Musicians and Musicians, First and Second Class, shall receive thorough instruction in the subjects of Salutes, Distinctions, Honors and Ceremonies. All these men shall also receive such additional instruction as the bandmaster may prescribe, subject to the approval of the executive officer. Particular attention shall be paid to the instructions in regard to the care of band instruments, as given in the Naval Instructions, Article 4587.

BUGLERS shall receive instruction in subjects "A" to "N," inclusive, as given in Part I of the Manual. Buglers must know how to sound properly all the calls in use in the service. It sometimes happens that buglers are more of a hindrance than an aid to the officer of the deck. They are often hard to find when they are supposed to be on watch. They sometimes sound a call only once and then regard their duty as done. A number of buglers are too much inclined toward skylarking and neglect of duty. Buglers must be made to realize the importance of sounding their calls accurately and thoroughly. They must use regulation bugles only, and these they must keep at the proper pitch. They must obey all calls at double time.

VII.

STEWARDS, COOKS, MESS ATTENDANTS.

All these men shall receive instruction in subjects "A" to "N," inclusive, as given in Part I of the Manual.

Q. Are stewards and cooks of the messman branch petty officers?

A. No; they are rated men.

Q. What is a "certificate of qualification"?

A. Stewards and cooks of the messman branch who have served for one year as stewards or cooks, and while holding such rating are recommended by their commanding officers, shall be given certificates of qualification from the Bureau of Navigation.

Q. How long does such a certificate continue in force?

A. Two years from date. But the captain may revoke it previous to the expiration, if the conduct of the holder warrants it.

Q. Under what circumstances may such a certificate be renewed?

A. Such a certificate shall be renewed by the commanding officer at the expiration of two years, for a similar term, provided the continued satisfactory performance of duty of the steward or cook so warrants. Provided also that the certificate shall lapse if the holder does not re-enlist within 4 months from date of honorable discharge.

Q. DO CERTIFICATES OF QUALIFICATION ENTITLE THE HOLDERS TO EXTRA PAY?

A. Yes. Stewards and cooks of the messman branch who are citizens of the United States, and who hold, or may receive, certificates of qualification as stewards or cooks, receive $5 per month in addition to the pay of their rating, while holding such certificates.

The attention of stewards is called to Naval Instructions, Article 825 (7), "Neither the steward nor any other person shall, without written authority from the mess treasurer, be permitted to incur indebtedness on shore in the name of the mess."

Q. What are the instructions for the rating of mess attendants?

A. Mess attendants, third class, shall not be rated as mess attendants, second class, until they have served satisfactorily for one year as mess attendant. And mess attendants, second class, shall not be rated mess attendants, first class, until they have served satisfactorily for two years as mess attendant. *Well qualified and deserving mess attendants*, second or third class, *may*, however, *be advanced in rating earlier* by special authority from the Bureau of Navigation. To be eligible for promotion, their standing in proficiency, sobriety and obedience must be not less than 4.

Men holding the following ratings may be re-enlisted within 4 months from date of honorable discharge, as indicated: Cooks and stewards holding certificates of qualification from

the Bureau of Navigation in the rating designated on such certificates. Ship's cooks, third and fourth class, and bakers, second class, and mess attendants in the rating and class in which discharged.

In addition to subjects "A" to "N," inclusive, MESS ATTENDANTS shall receive instruction in the following subjects:

1. Officers' uniforms for various occasions.
2. Catering.
3. The method of keeping rooms and compartments clean, scrubbing paint work, bright work; duties in connection with laundry; serving at the table.

STEWARDS.

A steward must be able to read and write intelligibly; he must know enough about arithmetic and bookkeeping to enable him to keep an accurate account of all of his transactions in a form that permits of ready auditing.

He must know all about the government allowance of mess equipage, his storerooms, cold storage, and ice allowance.

He must be able to buy at the best prices, must be able to make out proper menus for different occasions, must be a judge of quality as well as of quantity required.

He must have a thorough knowledge of all the details of service, and he must be able to instruct the mess attendants in their complete duties, and station them to do the work required. In fact, he has entire charge of the officers' mess, under the direction of the mess treasurer.

1. You are ordered as wardroom steward to a ship that is to be commissioned in a week. State all your duties in order to be ready for the full outfit of officers, and have lunch served the day the ship goes in commission. (This includes how you would get allowance of equipage; your duties in regard to personnel; purchases necessary to start the mess, and details of like nature.)

2. Ship in commission; 15 officers in mess; $150 worth of stores in storeroom; prepare to sail for three months' stay in Guantanamo. (To be independent of commissary.)

3. Mess of 15 officers; ship going into commission. Make out a station bill for servants. The allowance is: 1 cook, 7 mess attendants. The bill should include duties of mess attendants during morning watch, watch boy, arrangements in regard to liberty.

4. Describe in full the method of serving a formal dinner. Make out menu.

5. What are your duties in regard to staterooms, refrigerating room, ice chest?

6. What care must you observe in the use of fresh water?

7. When are you authorized to run an account?

8. Give list of articles that should always be kept in the pantry.

9. What are your duties in regard to personnel? For example, supervision over the tidiness and cleanliness of the mess attendants. What are your duties in regard to mess equipment?

10. What are your duties in regard to regulating the liberty of mess attendants?

11. What uniforms are required for stewards and mess attendants?

12. What are your duties in regard to notifying officers of a change in the uniform?

MESS ATTENDANTS.

Every mess attendant should aim to find out about all his duties so that he will not have to be told what to do. If you are a mess attendant, third class, remember that it is possible for you to be rated up before the expiration of your year as mess attendant, third class. To be eligible for such promotion, remember that your standing in proficiency, sobriety and obedience must be not less than 4; and that you must prove yourself to be well qualified and deserving. The best mess attendant is the one who *anticipates what is required of him.* There are many honest and reliable mess attendants in the service who fail of promotion because they always have to be told what to do. Find out what is required, and do it to the best of your ability. Remember that the officer whose room you are looking after doesn't want to have to send for you all the time. Learn to use your brain a little, and anticipate his wants. This is the best way to earn your promotion in the messman branch.

The following questions are typical ones for the examination of mess attendants:

1. What are your duties during the morning watch?

2. What are the duties of the watch boy?

3. What are your duties in serving meals?

4. What do officers wear when the uniform is special full dress?

5. White dress? White full dress?

6. Dress? Undress? Service dress? White service dress?

7. Evening full dress? Evening dress?

8. Dinner dress? Mess dress?

9. If you are in doubt about uniform, where do you obtain accurate information?

10. What is your uniform on board ship? Ashore?

11. What are your duties in regard to officers' staterooms?

The following instructions for mess attendants are taken from a battleship's order book:

The mess treasurer is in general charge of all mess attendants of his respective mess.

Mess attendants turn out at reveille; take a bath; clean officers' clothing; polish shoes; fill pitchers; clean messroom; set breakfast table; breakfast at 7 a. m.

Mess attendants must have a system of reliefs so that the duty of an absentee will always be performed, without special orders to that effect, and each relief will make sure that his mate is on board.

Unless otherwise directed, the senior mess attendant will have charge of the cleaning of the messroom, under the direction of the mess treasurer and steward. The messroom must be kept clean and well dusted at all times; everything must be neatly stowed; cigar trays empty. Under ordinary circumstances the daily cleaning and dusting of the messroom shall be finished before breakfast.

Boys on watch; two for wardroom, one each for junior officers and warrant officers.

The boy on watch provides coffee and toast in the morning watch for the officer of the deck, or other officers at such times as may be required.

The boys on watch sweep and dust the messroom and set the breakfast table. They stay in the pantry until 10 p. m., ready to answer calls.

Mess attendants must obtain permission from the mess treasurer before they go on liberty.

Friday is general cleaning day for messroom, pantries and galley.

Room boys will clean air ports; mess attendants regularly detailed by the steward will clean the ports of vacant rooms.

Storerooms will be kept clean. They will be locked and the mess treasurer shall keep the keys in an accessible place. Mess attendants will not stow anything in vacant storerooms.

The pantry boy has charge of the pantry, subject to any orders he may receive from the steward.

All glass and silverware will be cleaned on Fridays.

No clothing or toilet articles will be stowed in drawers in the pantry.

Mess attendants must wear white jackets at all times on board ship, either with white or blue trousers, according to the prescribed uniform of the day. When leaving the ship—and on board ship when they are ordered to do so—they shall wear the same uniform as other enlisted men.

Books necessary for citizens and for every man interested in home defense and the military.

Field Service Regulations	.75
Regulations for the Army of the United States	1.00
Manual for Army Bakers	.75
Blue Jackets Manual	1.00
Sanitary Troops	.75
Manual of Physical Training	.75
Rules of Land Warfare	.75
Coast Artillery Drill Regulations	1.00
Provisional Drill & Service Reg. for Field Artillery	1.25
Ship and Gun Drills	.60
Cavalry Drill Regulations	.75
Small Arms Firing Manual	.75
United States Army Transport Service Regulations	.50
Manual for Army Cooks	.75
Engineer's Field Manual	1.25
The Deck and Boat Book	.60
Infantry Drill Regulations	.50
Drill Regulations for Machine Gun Companies	.30
Manual of Interior Guard Duty United States Army	.50
Signal Book United States Army	.35
Provisional Drill Regulations for 6" Howitzers	1.25
Drill Regulations for Field Companies of Signal Corps	.75
Gunnery and Explosives	.40
Manual for Court Martials	1.10
Manual for Medical Department	1.10
Army Horse in Accident & Disease	.85
Non-Commissioned Officers and Privates Manual	.50
Provisional Drill Reg. for Horse and Light Artillery	1.25
Provisional Drill Regulations for 75 mm. Gun	.35
Provisional Drill Regulations for 155 mm. Howitzer	.35

All the above Military books have corrections **up to date.**

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W. H. PINKSTON

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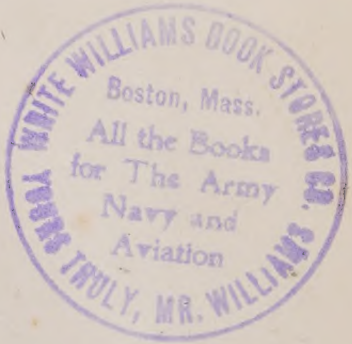
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